ENGINEERING NEWS-RECORD

Mining rig speeds rock sorting for dam p. 44

A McGRAW-HILL PUBLICATION

Note how the uppermost rail has been elliptically rolled. The wide range of wrought iron pipe sizes and forming methods available assures design flexibility.

Durable Wrought Iron bridge railings work easily in the shop—go up fast on the job

Wrought iron bridge railings meet the requirements of the entire roadbuilding team. Here's why.

For engineers and state highway people responsible for safety—as well as reduced costs—railings of wrought iron offer both. Wrought iron's structural strength gives it high impact resistance. And since wrought iron is not affected by attack from concrete, no special coatings are needed. Important too, is wrought iron's resistance to corrosive atmospheric conditions—another essential for long service life.

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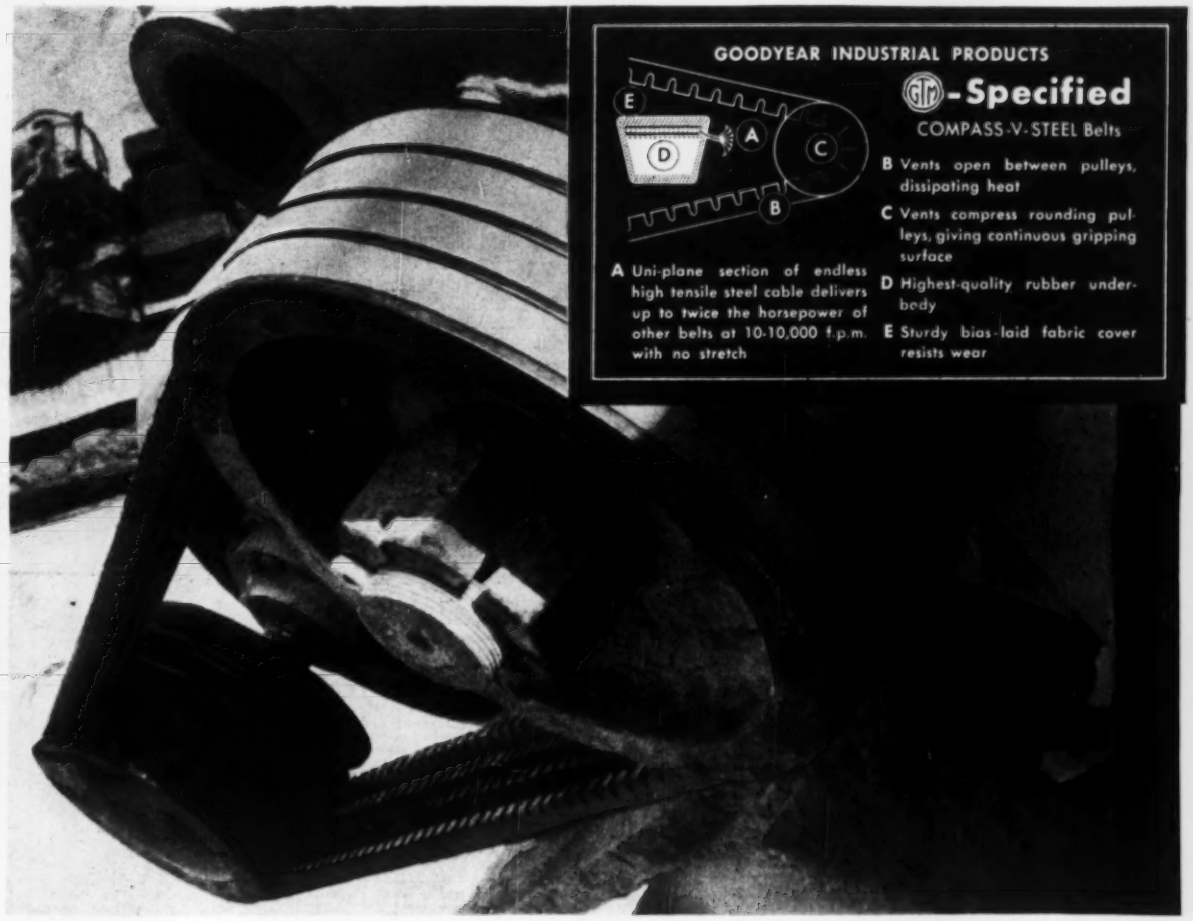
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COMPASS-V-STEEL Belts
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G.T.M. slashes vibrating screen belt costs by 45%

THIS DRIVE is atop a hot asphalt mixer. Extreme vibration plus heavy dust, oil, tar, moisture and exposure to weather kept maintenance up and belt life down to a *five to eight weeks' average.*

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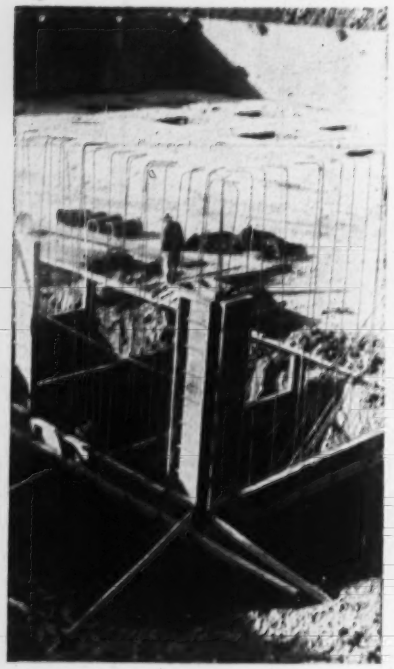

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7,500 square feet of Symons Standard Forms were used in the new 2 million gallon capacity pumping station at Melrose Park, Illinois. 2,000 cubic yards of concrete were used on the job and the concrete contractor, Louis Macro Company, Melrose Park, reported a 40 per cent saving through the use of Symons Forms. Walls for the job were completed in three pours.

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EIGHTY-SECOND YEAR OF PUBLICATION

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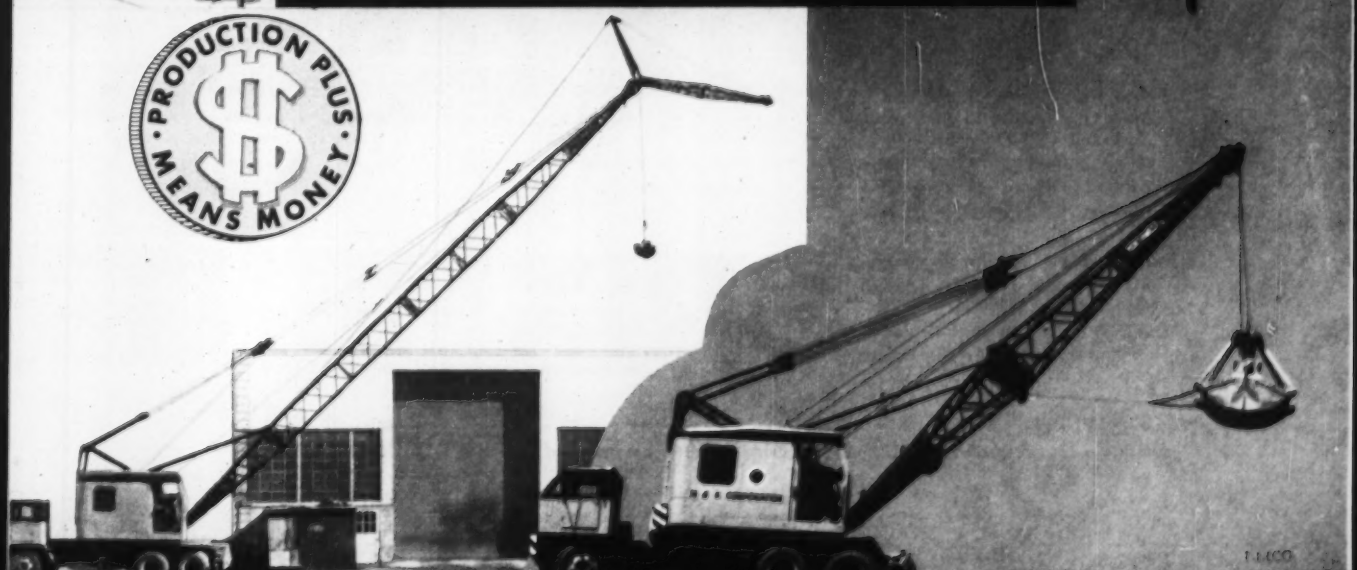
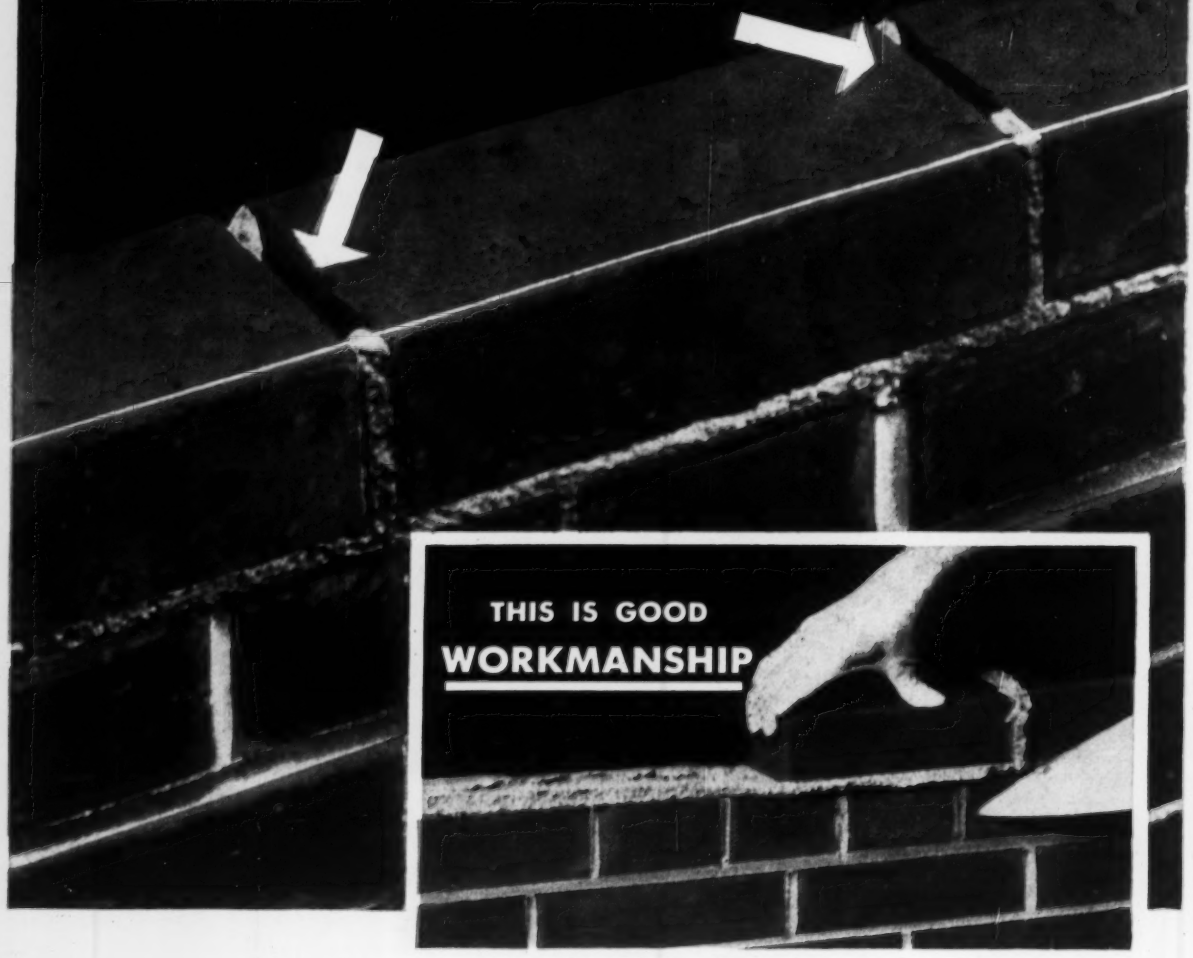


WHEN YOU SEE THIS KIND OF WORKMANSHIP,

EXPECT TROUBLE...



GOOD workmanship is one of the most important factors in preventing leaky brick walls.

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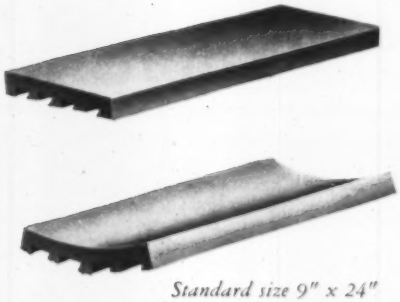

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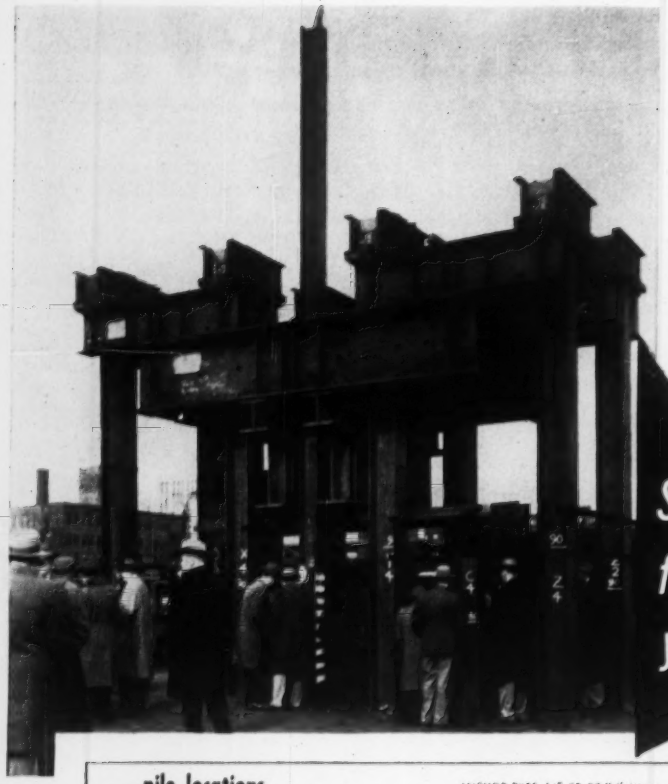
Chicago tests prove USS Steel



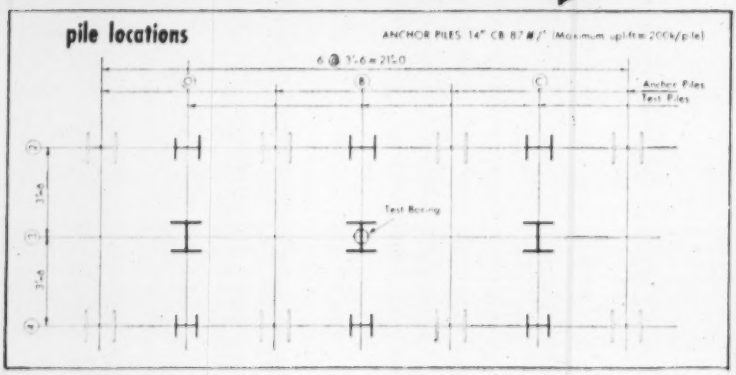
To provide authentic data showing USS steel H-beam piles capable of meeting limits allowed by the City of Chicago Building Code, United States Steel Corporation had the Armour Research Foundation of Illinois Institute of Technology conduct tests on a site having soil conditions typical of the Loop area. Tests were made at the corner of Harrison and Halstead Streets. A total of 17 piles were driven, eight of which were used as anchor piles. Data on the nine test piles is shown in the table below.

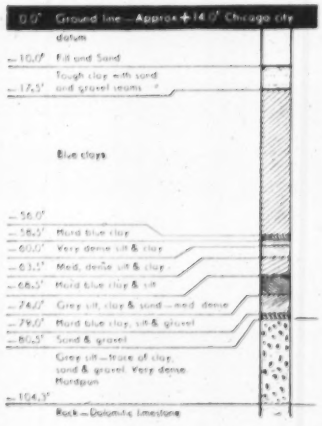
See for yourself

USS Steel H-Beam Bearing Pile Test

Pile Number	
Pile Size	
End Conditions	
Proposed Allowable Load—Tons	
Test Load—Tons	
No. of Blows in Last Inch	
Estimated Design Load by ENR Formula‡	
Total Deflection at Proposed Allowable Load	
Total Deflection at Test Load	
Rebound from Test Load	
Total Net Settlement	
Allowable Total Net Settlement by Chicago Code	
Load at Failure—Tons	
Avg. Unit Stress (fs) at Failure—psi	
Total Deflection at Failure	
Rebound from Failure Load	
Net Settlement after Removal of Failure Load	
Manner of Failure	

**Final driving of all piles by Vulcan type OR hammer—30,225 ft. lbs. ‡ENGINEERING NEWS formula.*




0.0' Ground line—Approx. +14.0' Chicago city datum
-10.0' Fill and Sand
Tough clay with sand and gravel seams
-17.5'
Blue clays
-56.0'
-58.5' Hard blue clay
-60.0' Very dense silt & clay
-63.5' Med. dense silt & clay
-68.5' Hard blue clay & silt
-74.0' Grey silt, clay & sand—med. dense
-79.0' Hard blue clay, silt & gravel
-86.5' Sand & gravel
Grey silt—trace of clay, sand & gravel. Very dense. Hardpan
-104.3'
Rock—Dolomitic Limestone

THEIR NATURAL ADVANTAGES *make* USS STEEL H-BEAM BEARING PILES *the logical foundation for heavy, multi-story buildings*

The design possibilities, low cost, and ease of installation of USS steel H-Beam bearing piles offer definite advantages over foundation caissons for supporting heavy buildings. Buildings of any height can be founded on steel H-Beam piles without limitations resulting from insufficient penetration. Excessive amounts of free water, marsh gas, and other adverse conditions which sometimes halt construction of open-pit caissons, offer no obstacles to obtaining required design loads with steel H-beam bearing piles. Furthermore, the cost in time, materials, and equipment needed to construct open-pit caissons makes USS steel H-Beam Bearing Piles the most economical type of foundation you can use.

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

high load-carrying capacity of H-Beam Bearing Piles

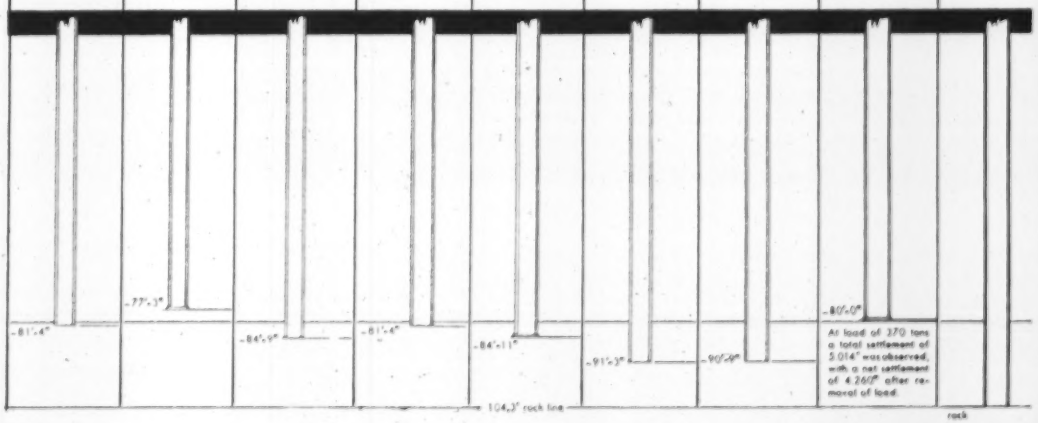
All of the nine piles tested exceeded the requirements of the Chicago Building Code, except for the closed end, 14-inch H-beam bearing pile that failed by excessive net settlement at a load of 370 tons. This pile was not driven to hardpan inasmuch as the desired driving resistance was attained before hardpan was reached. Therefore, it seems logical to assume that for loads of the magnitude of those under discussion, firm seating in hard soil should be a requirement.

Here again is proof that USS Steel H-Beam Bearing Piles are capable of carrying heavy foundation loads into stable mediums lying at great depth. Their capacity for high unit loads, both vertical and horizontal, permits fewer piles and fewer driving operations for a given load. They are readily handled in the field by ordinary equipment, are easy to splice, eliminate jetting, and withstand rough handling.

If you would like to receive detailed information regarding your particular foundation problems, please contact the office nearest you.

Data* (In accordance with Chicago Code requirements—in addition B4, B2 and B3 were tested to failure.)

D4	C4	B4	O2	C2	B2	O3	C3	B3
10" CBP 42 #/'	10" CBP 42 #/'	10" CBP 42 #/'	12" CBP 53 #/'	12" CBP 53 #/'	12" CBP 53 #/'	14" CBP 117 #/'	14" CBP 117 #/'	14" CBP 117 #/'
Open	Closed	Open	Open	Closed	Open	Open	Closed	Open
75	75	75	100	100	100	200	200	200
150	150	150	200	200	200	400	400	400
10	10	31	7	7	Refusal	22	24	On Rock
151	151	228	124	124	.....	208	213	.....
0.317"	0.312"	0.168"	0.359"	0.338"	0.270"	0.378"	0.454"	0.293"
0.773"	0.976"	0.501"	2.147"	1.321"	0.637"	0.891"	See Below	0.695"
0.633"	0.730"	0.549"	0.754"	0.810"	0.670"	0.723"		0.657"
0.140"	0.246"	—0.048"	1.393"	0.511"	—0.033"	0.168"		0.038"
1.50"	1.50"	1.50"	2.00"	2.00"	2.00"	4.00"	4.00"	4.00"
		240			300			635
		34400 psi			38500 psi			36900 psi
		0.985"			1.079"			2.669"
		0.831"			0.932"			1.176"
		0.154"			0.147"			1.493"
		Local Flange Buckling Above Ground			Local Flange Buckling Above Ground			Yielding Over Cross Section of Pile



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Reader Comment

Previous Truss-Tied Arches

SIR—Like the self-anchored suspension bridge, the truss-tied arch was originated by the Austrian engineer, Josef Langer, in 1859. Photographs and data on truss-tied arch bridges built at the following locations were published:

Mur River, Graz, 1881; Ihme River, Hannover, 1889; Kurfurstendam Street, Berlin-Hallensee, 1892; Elbe-Trave Canal, 1898; Segroth Street, Essen, 3 spans, 1910; Kleinfeld Street, Mannheim, 2-span continuous pedestrian, 1920; Spree River, Wiedendammer, Berlin, 1924; Danube River, Győr, first with side spans, 1925; Traun River, Ebelsberg, 1928; Oder River, Glogau, two single-track railroad spans, 1928; Elbe River, Tetschen-Bodenbach, with side spans, 1930; Drava River, Maribor, with side spans, 1933; Oder River, Schwetig, double-track railroad, 1938; Zala River, Zalahidvég, 1948.

Double-deck truss-tied bridges larger than the Fort Pitt span (ENR Oct. 25, p. 23) were proposed in the U. S. (ENR June 10, 1937, p. 859) and also in Europe. It is possible that the Fort Pitt structure will be the first large bridge of this type with two decks.

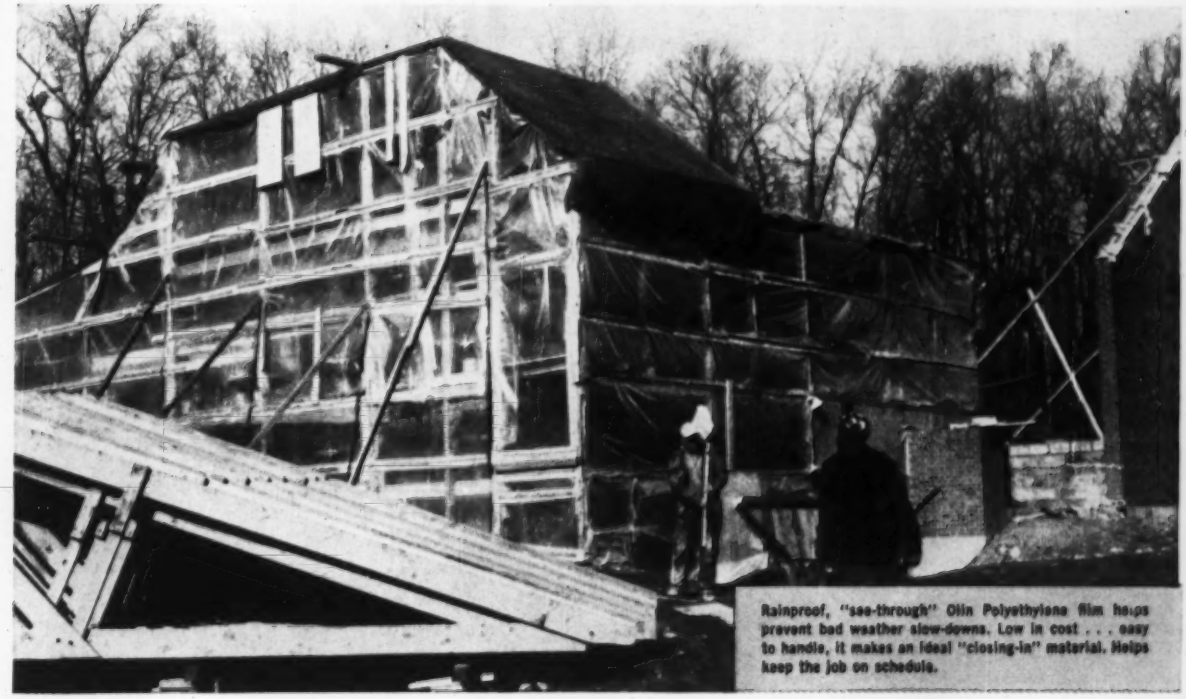
LOUIS BALOG
Consulting Engineer
Binghamton, N. Y.

De-Salting Costs

SIR—In reading your issue of Sept. 6 I came across two statements in regard to the reclamation of sea water which I believe are somewhat erroneous and should be corrected. They are in an article, "Fresh-From-Salt", on p. 72. This statement is that small systems of the multistage flash evaporation type could turn out drinking water for $3 per million gal. This is a cost of approximately $1 per acre-ft and in our estimation is extremely low. According to an article by Mr. Gilliland in Industrial and Engineering Chemistry of December 1955, most distillation costs vary from 30 cents to $2 per thousand gal, which would bring the cost up to from $100 to over $600 per acre-ft.

Our Owens Valley Aqueduct supply

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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Meets FHA Minimum Property Requirements . . . Fed. Spec. UUP-147 pertaining to moisture vapor control.

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Have your Euclid dealer give you all the facts on the TC-12—compare with your present big tractor equipment and you'll know why so many owners have proved that ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

for the city of Los Angeles costs about $16 to $18 per acre-ft. Raw Colorado River water supplied by the Metropolitan Water District costs about $10 per acre-ft, not counting tax assessment. Treated Colorado River water costs about $20 per acre-ft. Pumping water from local wells in the city of Los Angeles runs from $6 to $10 per acre-ft.

According to an article written last December in Industrial and Engineering Chemistry, costs of converting sea water to fresh water ran from over $100 per acre-ft to $300 or $400, depending on the process involved. Therefore we believe the statement that sea water could be turned into drinking water for $3 per million gal is not in accordance with water production costs at the present time, and that a correction should be noted so that readers will not get a wrong impression.

RAY L. DERBY
Principal Sanitary Engineer
Department of Water and Power
Los Angeles, Calif.

[EDITOR'S NOTE: Such a correction appeared in ENR Sept. 20, p. 12, but Mr. Derby's welcomed letter adds further information on the subject.]

Corpus Christi Builds too

SIR—We read with interest your article in the Oct. 18 issue of the Engineering News-Record on U. S. and Canadian Ports. However, we note that the article failed to mention Corpus Christi. I believe you will find that the Port of Corpus Christi has one of the largest construction programs underway of any port on the Gulf.

In addition to two bridges and a port freeway program, we will complete in November of this year the dredging of the Tule Lake Channel at an estimated cost of $1.4-million. This channel when completed will open up an additional nine miles of water frontage to development.

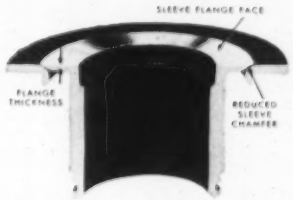
Bids will be opened on Oct. 31, 1956, to widen and deepen the La Quinta Channel at an estimated cost of $1.7-million. This project is to be completed about Apr. 1, 1957, to accommodate large bauxite ore carriers.

Plans are being prepared and it is contemplated that a continuing contract will be awarded in December of this year to begin widening and deepening the Port Aransas-Corpus Christi Waterway from the Gulf to Tule Lake. Under this program, the channel and basin will be dredged to a depth of 36 ft and a width of 400 ft with the work scheduled to be completed about the time the present bascule bridge is removed from the harbor entrance.

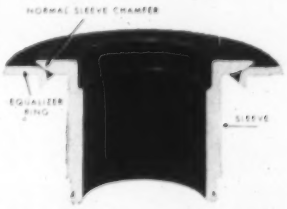
(Reader Comment continued on p. 14)

Only **LIPE** Factory-Exchange Clutches* are built the same as **NEW** Lipe Clutches

In Field-Rebuilt Clutch Sleeves All That Shines is Not New



SHINY CONTACT FACE on reground clutch sleeve indicates unprotected soft iron surface.



NEW LIPE CLUTCH sleeve easily identified by dark color resulted from rugged .007" case hardening and protective surface coating.

Ordinary clutch rebuilders just don't have the resources or the expensive equipment needed to recondition clutches the Lipe quality way. Some rebuilders even use unskilled labor, too few new parts and inadequate inspection methods: Practices that naturally lower the quality of the rebuilt clutch and shorten its service life.

At left is a typical example of inadequate reconditioning. Instead of replacing, as Lipe does, a worn or scored clutch sleeve with a new one, the rebuilder re-grinds the surface down through the case hardening to the soft metal beneath. That means the sleeve will wear quickly, and cause serious damage to the throwout bearing and a high rate of destructive slippage—*all greatly reducing the life of the clutch.* Such an improperly rebuilt clutch tested recently showed a total direct pressure loss of 120 lbs.!

Slipshod reconditioning always costs more in the long run. It pays to get genuine Lipe Factory-Exchange Tagged and Sealed Clutches. Contact your nearby authorized Lipe jobber for quick exchange service.

***Every Lipe Factory-Exchange Clutch is tagged and sealed at the factory—your guarantee of genuine Lipe parts and craftsmanship.**

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Manufacturers of Automotive Clutches and Machine Tools

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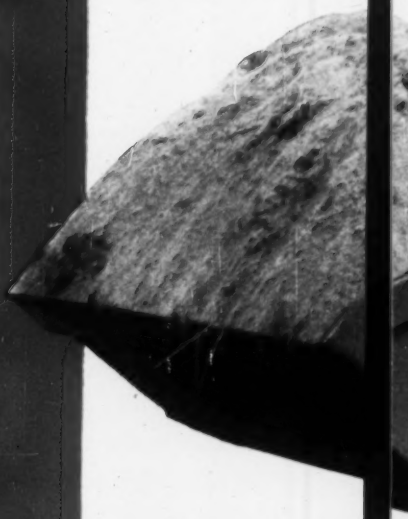
3-yd 4-in-1



Here's the big one of the fastest International Drott Four-In-One Skid-Shovel family: the new 3-yard TD-18 Four-In-One! Its bucket of hi-tech new T-1 alloy steel equals hi-tech high tensile manganese steel in strength—saves a ton of weight—boosts your production! And like all Four-In-Ones, this one completely eliminates the need for switching attachments!

It's a 3-yd. Skid-Shovel...

with Drott's exclusive "concrete-shattering," triple-power pry-over-shoe break-out action—and 42° ground level bucket roll-back. Skid-Shovel position also gives you time-gaining, strain-saving load transport on the exclusive Skid-Shoes!

It's a 3-yd. Clamshell...

that "surrounds" loose materials and fills in one fast gulp. And the bottom-dumping clamshell gives you a 2½-foot dumping height advantage over ordinary roll-forward buckets—plus positive, clean-out action even when handling sticky materials!

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"A new 3-yd. TD-18 4-In-1 Skid-Shovel proved able to do as much work as 3 power shovels and a dragline digging up and loading old concrete pavement on one of my recent highway jobs," reports Henry E. Berghuis, Prinsburg, Minn. "The 4-In-1 loaded up to 1,700 lineal feet of old pavement daily. Using 4-In-1 Clamshell bottom dumping, I also loaded out 4,500 yards of wet, sticky gumbo no other loader could tackle!"

NOW.. big-scale four-machine utility!

It's a 3-yd. Bullclam...

that gives you regular "carry-type scraper" action to grade, strip or spread with inch-close accuracy, using clam lip control. *Plus* exclusive Drott Bullclam efficiency on all Sanitary Landfill operations including positive fill compaction!

It's a BIG-capacity Bulldozer

with clam lip up, and shoes on the ground, the blade rolls the earth with precision. You regulate dozing depth with ease and accuracy by hydraulic "radius control" of blade pitch (forward and backward).

Touch the new 3-yard TD-18 Four-In-One's machine-selector lever! See how you instantly get any material-moving action you need—from the seat, with finger-tip ease—and stopped or on-the-go. Prove you can beat a fleet of limited-duty rigs with this *versatility unlimited*—get big-income, tough jobs other rigs can't handle! Compare the capacity-adding advantages of Drott exclusives like shock-swallowing Hydro-Spring and heap-keeping, parallelogram raise action. See your nearby International Drott distributor for a TD-18 Four-In-One demonstration. Or try the 1-yd. TD-6, 1½-yd. TD-9, or 2¼-yd. TD-14 Four-In-One!

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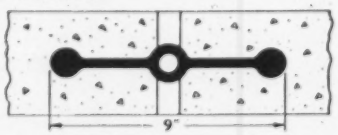
HOLLOW BULB—FOR EXPANSION JOINTS

Insures permanent, watertight seals in joints where considerable movement due to expansion and contraction is expected. Flexible and elastic with a very high degree of tensile strength to withstand both lateral and shearing movement. Widths—6" and 9" . . . lengths to order.



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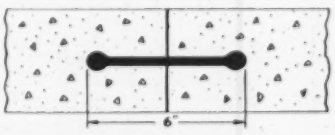


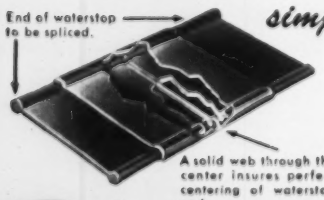
SPLIT TYPE WATERSTOP

faster, easier installation

A new Servicised development already in wide use because it reduces installation time and cost by eliminating splitting of form. One half of width is split to permit fastening to inside of bulkhead in the form of a "T." After section is poured, form is removed and divided sections are joined together by stapling. Pat. Pend.

WATERSTOP UNION

simplifies Field Splicing



Permits a faster, simpler method of field splicing, using only rubber cement. The union is hollow and is made from rubber meeting the same specifications as the waterstop. Available for splicing 6" and 9" Dumbbell and 6" and 9" Hollow Bulb Waterstops. Pat. Pend.

Write for Special Waterstop Catalog.

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Reader Comment

A contract will also be let by the Navigation District to dredge the Chemical Turning Basin on the Tule Lake Channel before the end of the year. This project is estimated to cost $500,000. The public has voted port improvement bonds to construct the largest and most modern bulk unloading facility in the West Gulf. Studies and plans are under way, and it is expected that a contract for the construction of the dock and equipment will be awarded sometime near the middle of next year. This is estimated to cost $2-million.

It will be necessary to reconstruct all oil docks, both public and private, in the harbor and increase the loading facilities to accommodate super tankers which will load at Corpus Christi once the bascule bridge bottleneck is removed. This project will cost several million dollars.

Studies are under way to double the capacity of the public grain elevator and to extend deep water westward to the vicinity of Viola, Tex., and the new refinery of Suntide Refining Company.

This expansion program may not be as large as some of the programs at other ports, however, for the size of the community, we feel that these expenditures are of such magnitude as to justify mention. In 1955, this waterway, which ranked high among those of the nation, handled over 27-million tons of waterborne commerce.

DUANE ORR,
District Engineer
Nueces County
Navigation District

CALENDAR

American Municipal Association, Annual American Municipal Congress, Chase and Park Plaza Hotels, St. Louis, Nov. 25-28.

Wire Reinforcement Institute, Inc., The Jung Hotel, New Orleans, La., Nov. 26-27.

American Association of State Highway Officials, annual meeting, Hotel Traymore, Atlantic City, N. J., Nov. 27-30.

Fourth Illinois Structural Engineering Conference, discussions on steel and concrete specifications, one-story building; foundations and high-strength structural steel, University of Illinois, Urbana, Dec. 3-5.

Illinois Institute of Technology, Modern Builders Conference, Prudential Building, Chicago, Ill., Dec. 6-7.

Highway Research Board, annual meeting, Sheraton-Park Hotel, Washington, D. C., Jan. 7-11.

American Road Builders Association, annual meeting and road show, Chicago Amphitheater, Jan. 28-Feb. 2.

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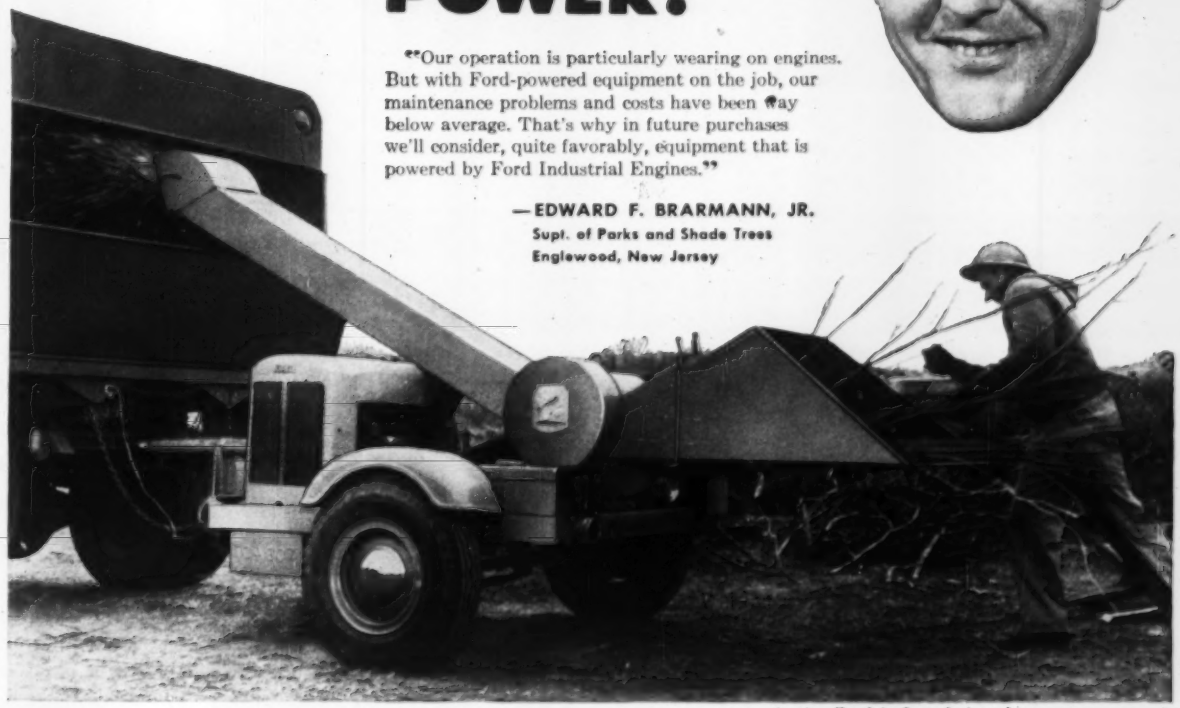
—EDWARD F. BRARMANN, JR.
Supt. of Parks and Shade Trees
Englewood, New Jersey



Again, Ford is first choice where economy counts

Englewood's Park Department now owns a total of six Ford-powered field units. Above, you see one of them in action—a 12" Asplundh Brush Chipper.

Powered by a Ford "172" Heavy Duty Industrial Engine, this speedy worker takes on branches up to a half-foot in diameter. It eliminates double handling, does away with countless trips to dumping areas and steps up Englewood's brush removal program by an estimated *six times*.

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Ford Short Stroke design cuts friction, lessens engine wear and releases more *usable* power . . . power that goes to waste in ordinary engines. The benefits of deep-block construction (also available in Ford's new super-efficient 4-cylinder Diesel) are a smoother running, more durable engine—one that requires minimum maintenance even in the toughest going.

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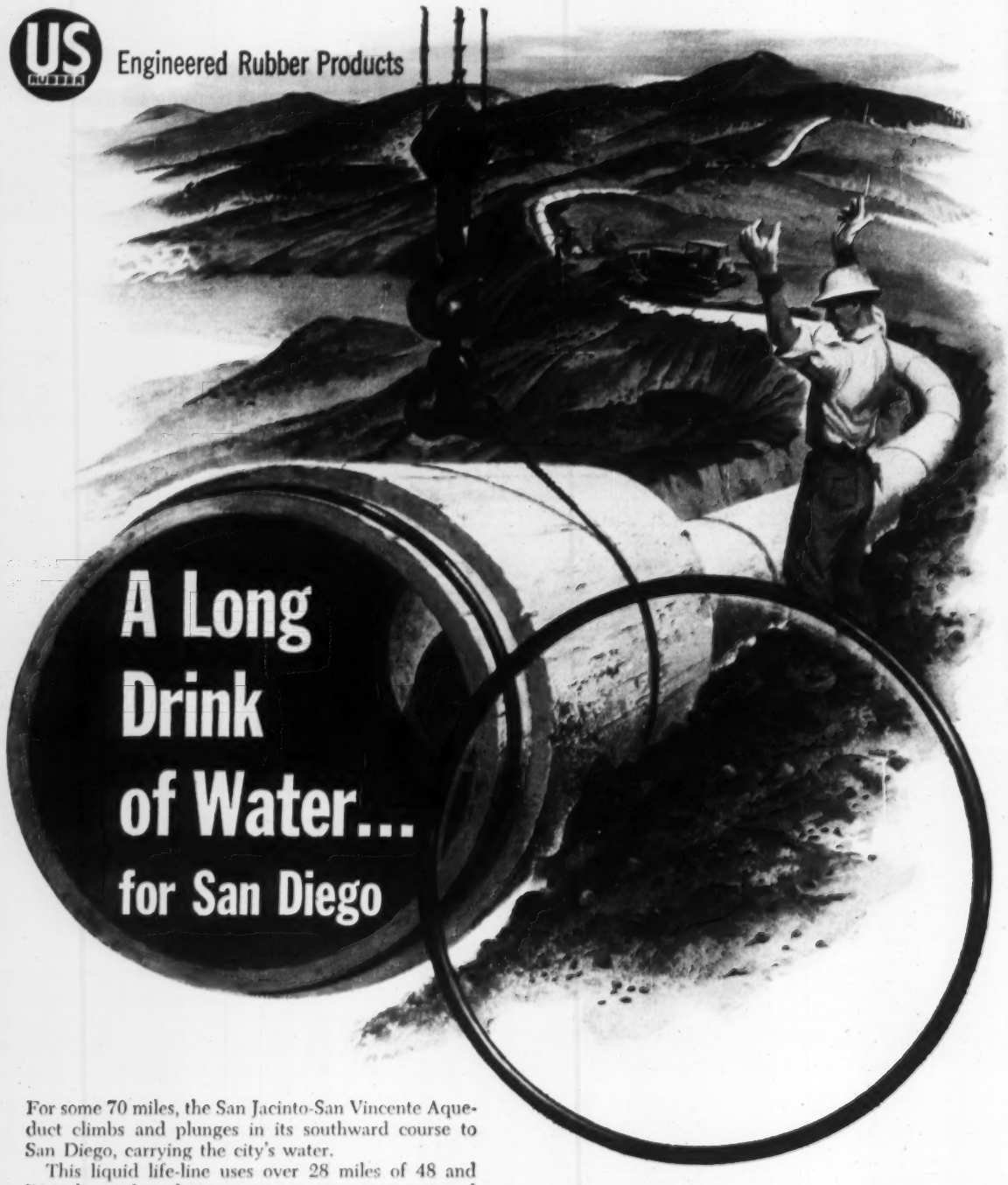

A Long Drink of Water... for San Diego

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ENGINEERING NEWS-RECORD

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CONTENTS

NATIONAL AFFAIRS
- The Boom in Public Works Will Continue 21
- Big Day for Public Works 22
- Wall Backup Panelized 23
- "Grand Plan" Gets Out of Low Gear 24
- Bay Crossing Is Financially Marginal 24
- Concrete Landing Deck Goes to Sea 25
- Liberal Rules for Federal Pollution Aid 26
- Moles Name 1957 Awardees 26
- Search for Sturdier Asphalt Runways 27
- Reservoir Tunnels Will Locate Water Leaks 27
- Michigan Airport to Cost $10.7 Million 29

FEATURES
- New Use for High-Strength Steel 33
- Corrugated Metal Sewers Go In Along the Raritan 34
- Abrasive Rock, Asphalt Facing for Water Supply Dam 44

NEW PRODUCTS
- Twin-Shaft Machine Trowel 49
- Direct-Drive Pump for Tractor-Mounted Ripper ... 49
- Reinforced Plastic for Ladder Side Rails 52
- Trailer-Mounted Portable Steam Plant 54
- Rotary Drill Uses Air and Water 54
- Publications 56

MEN AND JOBS
- Dean Steinberg to Head Brazilian School 58
- General Chorpening Joins Firm 58

INTERNATIONAL
- Largest Sewage Lagoon for Regina 64
- Mackinac Bridge Studies for European Application 64
- Metal Umbrella Shields Construction 69
- Slotted Windbreak Protects Ships at Piers 70

FIELD AND OFFICE
- Drawings Inserted as Windows in Computer Punch Cards 78
- How to Compute Reinforcing for Oversize Columns 80

BUSINESS AND FINANCE
- Photogrammetry: Fast-Growing Business 107
- Road Materials Plentiful in Key Cities 107
- Construction Outlays Set October Record 108
- $10-Million Co-op Apartment Planned 108
- Loan Fund Shortage Causes Housing Delays 108
- $250-Million Face-Lifting for Philadelphia 108
- Construction Market: Baltimore 110

LABOR
- Teamsters' Aim: Two Million Members 114
- How Labor Interprets Election Results 114
- Building Trades Oppose Atom Plant 114
- Labor Blamed for High Building Costs 115
- AFL-CIO Housing Proposals 117
- Labor Unity Shows Gains 117
- Organizing Agreement Reached in Hawaii 117
- Lathers and Employers End Dispute 117
- Carpenters Support Lumber Industry Promotion ... 117

Reader Comment	8	Unit Prices	82
Calendar	14	Materials Prices	84
Obituaries	59	Construction Reports	87
Books	73	Scoreboard	104
Legal	77	Editorials	132

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

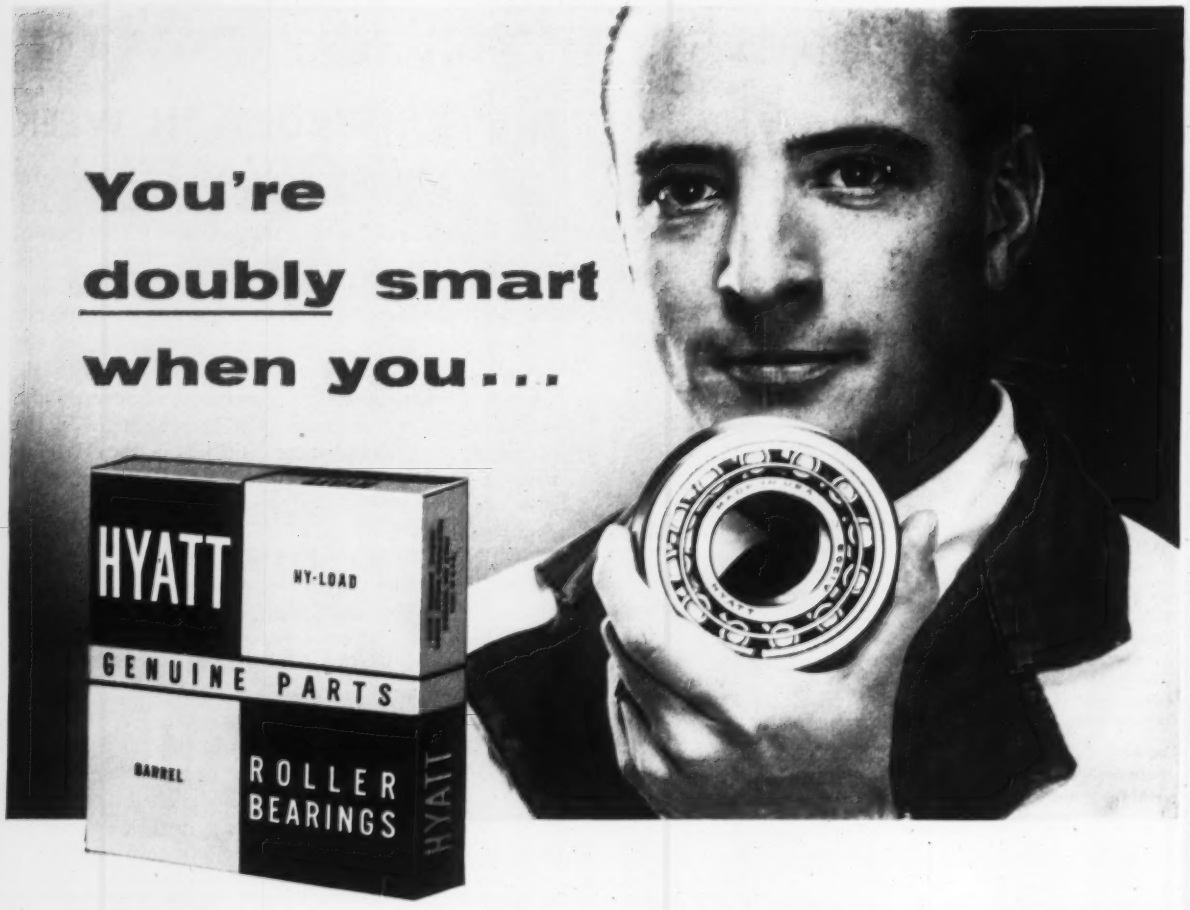
MISSISSIPPI WATER CRISIS—If St. Louis' low water situation becomes an emergency (ENR Nov. 1, p. 21), Army Engineers will release 400,000 acre-ft of Missouri River water to supplement the normal 7,500 cfs winter release. Over a two-week period the additional flow amounts to about 15,000 cfs, over four weeks 7,500 cfs. The decision followed an emergency meeting of the Coordinating Committee on Missouri River Main Stem Reservoir Operation, composed of seven states and seven federal agencies. The helping hand to the Mississippi may entail some hardship in the Missouri Basin if 1957 is another dry year. As of November 12, river stage was −3.

LEASE-PURCHASE ON STATE LEVEL?—Attempting to hold down expenses—and to satisfy Trenton businessmen who don't want to lose state business—New Jersey's legislature will consider this week whether to go into a lease-purchase arrangement as a means of getting needed state office space. Gov. Robert Meyner has proposed moving scattered state offices out of Trenton to new buildings in the city's suburbs. State Senator R. R. Stout, head of a legislative commission taking up the problem of new office space, suggested the lease-purchase plan instead. He commented that private capital then would build the structures, and the state could take them over at no greater cost than the $1 million yearly now spent for rental in the capital city area.

NEIGHBOR GETS JUMP—While Detroit continues to argue about what's to be done about its port facilities (ENR Oct. 18, p. 23), neighboring Windsor, Ontario, was on the move last week to get into the race to develop Detroit River facilities. Ojibway Development Co., Ltd., announced it had paid $10.5 million for a 1,400-acre plot just east of Windsor city limits on the river for the express purpose of pushing it as an industrial and port area. Said Philip F. Morand, general manager for Ojibway: "The area comprises one of the few sites on deep water suitable for a major industrial complex, to be served by lake and ocean shipping."

Added point: Part of the area could be made available for a Detroit-Windsor municipal airport.

SAUCE FOR THE GOOSE—The City of Columbus, eyeing a recently-granted increase of 20% in pay to state-employed engineers, has asked the Civil Service Commission for a similar increase for city engineering employees. City councilmen citing payments of $3.1 million in fees to outside consultants since 1952, commented that better pay for city engineers would attract more men, result in more work done by the city's forces and less outside payments.



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HYATT HY-ROLL BEARINGS FOR REPLACEMENT

WASHINGTON OBSERVER

The partnership policy on natural resources may be on the way out. Top GOP officials—including Vice-President Nixon—are telling Eisenhower that discontent over power development was responsible in large measure for the Administration's setbacks in Senate and House races throughout the West.

Already, Interior Secy. Fred A. Seaton is looking for a new approach. Thus far, it's all in the talking stage, but Seaton and his advisers will probably come up with something that amounts to more of a middle-road approach than that of partnership. Seaton never was particularly sold on partnership, a concept he inherited from Douglas McKay who was one of the foremost Republican casualties.

Rumors have it that Housing Chief Albert Cole may go, but don't bet on it. These were particularly rampant just before the election, when GOP National Chairman Leonard Hall felt that housing policies were hurting the party. Cole got his job through the committee's patronage setup, but he has influential friends inside the White House and probably can't be forced out easily.

•

The housing slump will continue far into 1957—That's the newest advice that top government and business leaders give in their first post-election look at the economy. The estimates come from the Commerce Dept.'s Business Advisory Council meeting last week. Some other forecasters see a drop from the present rate of just over a million starts a year, to 900,000. Dollar volume is going up because of increased materials prices, and because home buyers are wanting larger establishments.

Other construction is continuing to be healthy. Expansion of capital plant and equipment in 1957 will at least match this year's rate. The third quarter this year is estimated at a $36-billion annual rate, some $6-billions over 1955.

Steel production will be up in 1957 to meet rising demand, but the waiting time on deliveries of some types—structurals and plate—will continue to be on the long side.

Credit will continue to be tight. Administration officials hold out little hope of any easing soon. Indeed, there are significant hints that the Federal Reserve Board may tighten it even more by approving another rise in the discount rate that district reserve banks impose.

•

Bidding and contracting procedures on lease-purchase projects are being revised by the General Services Administration in an attempt to stir more interest among contractors and investors.

The new policy is the result of receiving non-matching bids under the original policy of permitting bidders to submit a combination bid covering both financing and construction, or financing alone, or construction alone. Bids received just didn't work out. So, the Council Bluffs, Iowa, Post Office-Court House and the Public Health Service Communicable Disease Center at Atlanta, Go. are being readvertised under the new terms:

Only "package bids" covering financing and construction will be asked from here on out. Separate bids will no longer be invited.

The government will now pay all real estate taxes directly to the taxing authorities involved.

Bids will be asked for either 10 or 25 year terms, with bidders having the option to bid on either or both bases. Other changes include limiting the government's right to pre-payment of unpaid balance to the last half of the term of the purchase contract.

The new terms will be applied to six other projects already out for bids: buildings at Abingdon, Va.; Albuquerque, N. M.; Burlington, Iowa; Green Bay, Wis.; Huntington, W. Va.; and Kansas City, Kan.

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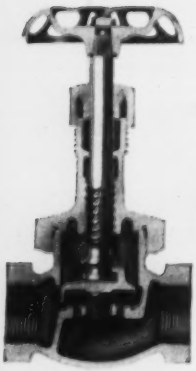

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EISENHOWER IS WINNER IN 41 STATES

Last week's headlines indicate that . . .

The Boom in Federal Work Will Go On

Four more years of expanding federal construction can be counted on as a result of last week's elections.

The voters kept the old management on the job: Eisenhower and his Republican team running the executive branch and the Democrats holding the purse strings in Congress. This is the "partnership" that has consistently boosted federal construction spending during the last two years.

There will be no dip in the upward trend of government outlays for roads, dams, schools and hospitals in the next four years. Rather, the rising curve of federal construction—both for new project starts and for cash expenditures—is likely to go up even more rapidly.

Part of the predictable fast rise is made certain by laws already on the books. Federal payments to the states for highway construction will step up from $1 billion in the current fiscal year ending next June 30 to $1.5 billion in the following 12 months and to $2 billion the third year and $2.7 billion the fourth. At the same time, federal grant and loan programs for sewage treatment plants, nuclear power, urban renewal projects, local irrigation and watershed development works, low-rent public housing, airports and medical facilities will be taking hold in a big way.

Added to these programs—already enacted and in operation—are strong prospects for other live proposals that failed to pass in the last session but will come up again for legislative action as soon as the new Congress organizes on Jan. 3. Chief among the big construction possibilities is federal aid for new school buildings. The White House and the Democrats try to pin the blame on each other for defeat of this legislation in the last Congress, but integration, of course, is the derailing tool that opponents of the Kelley Bill used then and will attempt to use again.

This time, however, the opposition is less sure of success. The changed outlook stems largely from the tough job that faces the Republicans in building up party strength for the Congressional races of 1958 and the Presidential contest two years later. Their objective plainly is to prove themselves bigger, broader and more conscientious than the opposite party in promoting the public welfare.

Federal aid for school construction is a major plank in the welfare platform of both parties. Eisenhower swung over to full-powered support of the idea after his White House Conference on Education recommended it last December. But his team held out for distribution of federal funds on a basis of need and effort rather than on a school-enrollment basis as-written into the Democratic bill.

When the next Congress convenes, the White House will bend more pliably toward a compromise that the Democrats can accept, just as it did on the highway bill during the last session. In the new spirit emanating from the President's office, school aid will stand a better chance. It remains to be seen, however, whether the White House can hold Rep. Adam Clayton Powell and other recalcitrants in line to permit passage without an anti-segregation fight.

Other construction programs, both operational and pending, will likewise benefit from the more expansive White House policy. Vice President Richard Nixon will share the spotlight on the liberalized approach.

Eisenhower recognizes that his Vice President is far from equalling the Commander-in-Chief as a public idol, and Republican strategists know they have to play some smart politics during Eisenhower's second term to build up Nixon's prestige as a Presidential candidate for 1960.

They count on little help from Congress on this big job. Democratic control of the legislative branch will continue, they fear, even after the House elections of 1958.

Accordingly, Administration policymakers aim to outdo Congressional Democrats in promoting sound development of national resources. All phases of federal construction will feel the effects of this generous and sympathetic attitude toward programs and projects.

Congress next year will be in the same hands that have run the two houses for the last couple of years. No changes are in prospect for House and Senate leaders or for committee chairmen, except on House Interstate and Foreign Commerce, where Rep. Oren Harris of Arkansas moves up to take the place of deceased J. Percy Priest.

Speaker Sam Rayburn will remain in charge of the House and Sen. Lyndon Johnson will continue as Democratic leader of the Senate. The powerful House Rules Committee still will be dominated by Chairman Howard Smith, stout Virginia conservative who almost smothered the 1956 housing legislation.

Chairmen of the last Congress will continue to head the important Appropriations, Public Works, Interior, Agriculture, Armed Services, Veterans, Banking and Judiciary Committees, as well as those dealing with taxes and with federal aid for schools.

Highways, housing and Administration credit policies are due for sweeping investigations as a result of the elections. Bertram D. Tallamy of New York is now sure to take the post of Federal Highway Administrator in January, succeeding the temporary head, John A. Volpe of Massachusetts. But the chairmen of the roads subcommittees in the House and Senate have promised thorough hearings on the progress being made by the Commerce Department in getting the $33-billion highway program started.

Neither Sen. Albert Gore nor Rep. George H. Fallon, heading the respective committees, is satisfied with the slow job done by Commerce Secretary Sinclair Weeks in obtaining a highway administrator. Both groups have searching questions to ask regarding the promised build-up of the bureau that handles the program and action taken to get the work rolling. Looming large is the possibility that Congress may get behind Gore's plan to set up an independent commission to take charge of public roads.

Voters Add 2 Billion to Local Debt But Bar $150,000,000 Projects

...Big day for public works

Christmas for the construction industry came on Nov. 6 this year as voters approved more than $2 billion worth of bond issues for scores of state and local public works projects.

A record total of $2,678 million was presented to the voters; 85% of the total was approved.

For statewide bond issues, California led the list. Voters there approved issuance of $800 million in state bonds. The total included $500 million to help veterans finance purchases of farms and homes and $300 million for construction of schools and colleges.

New York also boosted the bond issue total as Empire State voters approved a king-size $500-million issue for highways. A similar proposal, for $750 million, was defeated previously because of widespread opposition to a mandatory two-cent a gallon increase in the state gasoline tax incorporated into the bond issue proposal. This time, there was no provision for a tax increase, and the bond issue won handily.

New York voters did an about-face on another major bond issue. After voting $50 million to start a middle-income housing program in November, 1954, they rejected this year a proposal to extend the program to the tune of $100 million. This was the largest single bond issue defeated Nov. 6.

Texas voters approved a $100-million bond issue for a loan fund that will help ex-servicemen purchase homes and farms.

Kentucky's $100-millon bond issue for highways won, ensuring the state ample funds to match federal contributions that will be received under the new highway program.

• Baltimore opens purse—Aside from these $100-million-and-up statewide bond issues, the biggest eye-catcher was Baltimore's package. Voters agreed to spend some $94.8 million for a variety of public works programs.

Biggest item on the Baltimore ballot was a $45-million proposal to finance construction of a pipeline to the Susquehanna River and to expand the city's distribution system. The pipeline will cost $35 million. It will extend some 37 miles from the City of Baltimore to the Susquehanna River above Conowingo Dam. By adding this new water source to the city's system, authorities expect to have adequate supplies until the year 2000.

Two major school construction bond issues also were approved in Baltimore. One, for $14.5 million, will finance construction of three senior and junior high schools and four elementary schools during 1957.

The second school bond issue, for $15 million, will pay for construction of four high schools and two elementary schools in 1958.

Other major Baltimore bond issues approved included:

- $6 million for a civic center.
- $5 million for sewerage and storm water drainage systems.
- $5 million to continue the city's program of financial aid to private groups building parking garages and parking lots.

(For other developments in Baltimore, see page 110.)

San Francisco gave the go ahead to two bond issues that totaled $52 million.

The voters approved a $27 million bond issue for school construction. This will finance two new high schools, three new elementary schools and additions to existing schools, including buildings at San Francisco City College.

The other San Francisco bond issue, for $25 million, will finance improvements at San Francisco International Airport. These improvements include extensions to runways, helicopter facilities and additional concourses to handle passenger loading.

Elsewhere in California, Fresno voted $11.8 million for schools; Redding approved $3 million for schools; San Diego, $27 million; San Rafael, $7.5 million for roads; Los Angeles County, $15.4 million for the new Harbor Hospital and $15.5 million for a juvenile detention building.

• Pays to publicize—Proof that it pays municipalities to publicize public works bond issues was demonstrated in the emphatic manner as Philadelphia voters approved three proposals to borrow a total of $46.9 million for capital improvements.

The three passed by a margin of nearly 3 to 1. Yet, only three years ago, the same proposals were handed a thumping defeat, which set the city's proposed improvement program back on its heels.

Immediately after the initial setback, the mayor formed a citizens' committee to acquaint the voters with the projects and explain why they were needed. The three-year campaign worked, and the city will now be able to spend:

- $24.8 million for rehabilitation of the city's water and sewer system.
- $18.1 million for construction at the port, airport, commercial museum, exhibition and convention halls, police and fire stations, libraries, the Broad Street subway, redevelopment, streets, bridges and miscellaneous facilities.
- $4 million for construction of hangars at International Airport, these hangars will be leased to private operators.

Wichita, Kan., in approving a $40.1-million bond issue, charted new paths in city water department functions and financing. Of the total, $32.5 million is earmarked to enable the city to buy the privately-owned Wichita Water Co. This will consolidate the city-owned water supply and the privately-owned distribution systems. Slightly more than $7.6 million of the amount voted will finance construction of a pipeline to a proposed reservoir 25 miles distant on the Ninnescah River. (This reservoir is expected to be built soon as a federal flood control project.)

In Cincinnati, voters authorized expenditure of $15.5 million for expressways; $9 million for urban renewal; $6.5 million for street improvements. Hamilton County also voted $6 million for roads and $4 million for storm and sanitary sewers.

Seattle voted a total of $32.5 million in bond issues. One issue, for $25 million, was for King County School District No. 1. This issue will make it possible for work to start within two years on an extensive school-building program including two $3.3-million high schools; a $2.5-million junior high school and three $1-million additions.

The other major Seattle bond issue will finance a $5-million civic center.

While Seattle voters were generous on these propositions, they turned a deaf ear to a proposed constitutional amendment that would have permitted the state to take immediate possession of property being condemned for highway right-of-way.

Cook County, Ill., which includes Chicago and several populous suburbs, voted $25 million for hospital expansion program.

Chicago voters also authorized a $10-million bond issue for street lighting.

Aside from the bond issues, the ballots carried a number of constitutional amendments or other proposals in vari-

ous states that directly affected construction.

One of the most publicized, and one of the most controversial, was a California constitutional amendment that would have clarified the right of the state to hire private architects and engineers for public works design. The proposal was rejected by a large margin. The defeat generally was attributed to efforts of the California State Employees Association, which contended the proposal was a threat to civil service and an opening wedge for return of political spoils system. However, many leading civil engineering and contracting groups supported the measure. The vote means that design of state buildings, highways and water resources projects must be done by the state civil service employees. With bigger construction programs developing, the State of California apparently will be in the market for more engineers and architects.

Garbled Road Web?

Private group asks for a reappraisal and integration of state's highway system

Complete reclassification of Connecticut's highway system and integration of all important highways into one system has been urged by the Connecticut Public Expenditure Council, a privately financed group.

Stating that the 3,000-mile system is not continuous or logically planned, the council expressed concern that the haphazard results of more than 40 years of piecemeal legislation would affect the $1-billion program of construction scheduled under the new federal highway bill.

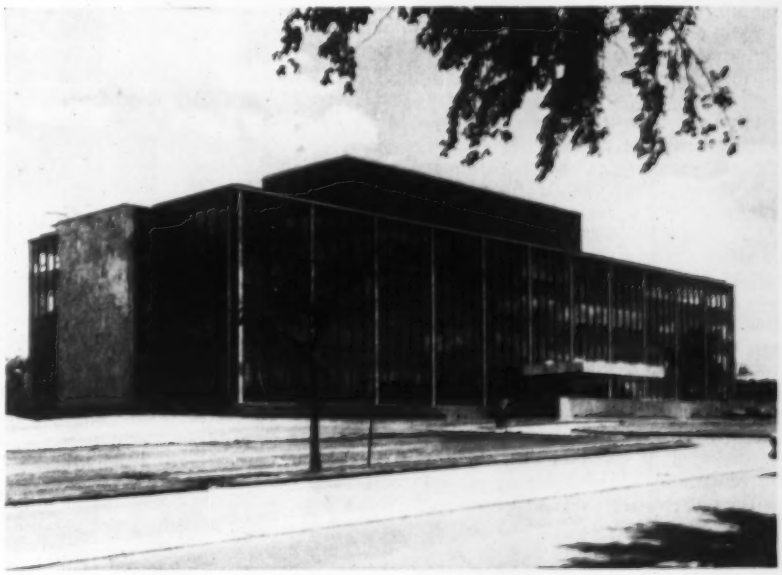
The report claimed that roads now under jurisdiction of the State Highway Department contain 116 separate system breaks, a total of 170 miles, that are under local jurisdiction. Many of them occur in metropolitan areas where state highways end at city lines and connecting urban routes are locally financed and locally maintained. Where such breaks occur, roads tend to be narrow and congested.

The council also said that there are an additional 20 sections of state highway completely disconnected from any other part of the state highway system. Maintenance of such sections, many of them less than a mile in length, is "needlessly expensive."

Besides the others, according to the group, there are about 200 state-maintained spurs that usually run for short distances off state highways and come to an abrupt end. These in the opinion of the council should not be a part of the designated state highway system.

FROM THE INSIDE of a new Minneapolis office building, prefabricated backup panels were attached to vertical mullions.

FROM THE OUTSIDE a colored glass facade was placed in front of the backup, which was left exposed temporarily, (arrow).



GLASS WALLS and windows enclose the four-story building above the first floor.

Wall Backup Panelized

For the exterior walls of the $4-million, 4-story headquarters office building being constructed for American Hardware Mutual Insurance Co. in Minneapolis, Minnesota, a rigid-insulation backup was assembled into a single unit for installation above and below each window.

The walls are only 3½ in. thick. They consist of an exterior facing of opaque, colored glass panels separated from the panelized backup by a 1-in. air space. The backup consists of 2-in.-thick cellular-glass units in a pan of galvanized sheet metal, with a double rubber gasket around the outer edge. Placed from inside, the pans were attached to mullions that extend the height of the building. The colored glass panels were installed from outside.

Thorshov & Cerny, Inc., Minneapolis, were the architects.

Under pressure from the White House . . .

The "Grand Plan" Gets Out of Low Gear

Under the spur of a Presidential directive, U.S. government sources reported last week that the nation's $33-billion interstate highway program is beginning to move with some speed.

John A. Volpe, Federal Highway Administrator, says that 31 states have contracted for 107 projects on the system in the period between June 29 (when President Eisenhower signed the highway bill) through Oct. 26. The contracts, covering costs of more than $100 million, involve 276 miles of road within the interstate system.

In addition, Volpe points out, plans have been approved and bid calls authorized for 40 additional projects to cost $120 million. Most of these jobs will be let within the next three weeks.

The work to date is still a small dent in the $7 billion that most sources confidently expect will be spent during 1957 for highway work of all kinds—including the interstate system, for which the federal government is putting up 90% of the funds. But it is taken as evidence that the program is beginning to move and soon will snowball into proper proportions.

• **States get busy**—Evidence of the increasing tempo of highway work is the information that California—moving into high gear on its own expanded highway program—has advertised $62.7 million worth of contracts within the last six weeks.

State Engineer G. T. McCoy reports that California has let or advertised some $163.5 million of road construction work out of its 1956-1957 fiscal year budget. Although only four months of that fiscal year actually have elapsed, the total represents about 87% of the major construction projects that are included in the budget. Much of the remaining $25 million in projects for the current fiscal year will be placed under contract or advertised by Jan. 1.

Another state moving fast is Montana, where the Highway Commission has awarded the largest block of contracts in the state's history—10 jobs worth $3.8 million. The latest award brings to $23.7 million, the total value of contracts awarded during 1956, and one more sizable letting is scheduled to take place before the end of the year.

North Carolina, meanwhile, announces it is "well into" a construction program aimed at bringing its 717-mile portion of the interstate system up to engineering standards for safety and for movement of large volumes of traffic. Chief Engineer W. H. Rogers reports that of the total mileage, locations have been decided upon for 350 miles, and 175 miles of road are in various stages of construction. A problem has cropped up, however, in the matter of width of right-of-way. In recent years, North Carolina has been building limited access highways with a 260-ft right-of-way. But now the state feels it should have 300-ft right-of-way available, and this change will cause further negotiation with many property owners.

And in Ohio, the State Highway Department reports it will spend an additional $83 million to convert the 84-mile segment of Ohio Route 7 between East Liverpool and Hannibal into a more modern highway. Much of the route will be made four-lane, and the rest will be two-lane with a four-lane right-of-way.

• **Other developments**—Other highway plans not directly connected with the federal interstate system are pushing ahead, according to reports to ENR's correspondents.

Missouri and Kansas highway officials have conferred with the U.S. Bureau of Public Roads on plans for a new bridge across the Missouri River to link the two Kansas City's—or a determination on expanding present connections via the Intercity Viaduct. The officials have agreed to employ a consulting engineer to make a feasibility report on the plans.

In Virginia, construction of a second tunnel under the Elizabeth River between the cities of Norfolk and Portsmouth moved a step nearer when the Elizabeth River Tunnel Commission authorized consulting engineers to execute a contract, for test borings.

Meanwhile, officials of four states—Wisconsin, Illinois, Iowa and Missouri—have been invited to Milwaukee Nov. 16 for an all-day meeting to push construction of an express highway linking Milwaukee's port area with industrial areas to the south and west. The proposed highway will be built south from Milwaukee through Janesville and Beloit in Wisconsin, Rockford, Rock Island and Moline in Illinois and Davenport, Ia.

And Kentucky, which already has paid a management firm $37,000 to look into its highway department's operations and administration, has agreed to pay another $50,000 for an extension of the survey. State officials look wryly at the report to date, which lists such inefficiencies as hand-kept records, an odd district-and-zone administrative setup, and a listing of political pressures on the department to the point where administration had bogged down.

Bay Crossing Called Financially Marginal

The $235.7-million version of the proposed southern crossing of San Francisco Bay—complete with approaches—cannot be built at a 25-cent basic toll, according to Smith, Barney & Co. in a financial feasibility report made for the California Department of Public Works.

A minimum-cost of $183.5-million crossing, without approaches, could be built at a 25-cent toll, the report said. But, it cautioned that the revenue bond issue must be considered "marginal as to financial feasibility" and added that an increase in tolls might be necessary later to maintain net revenues for debt service.

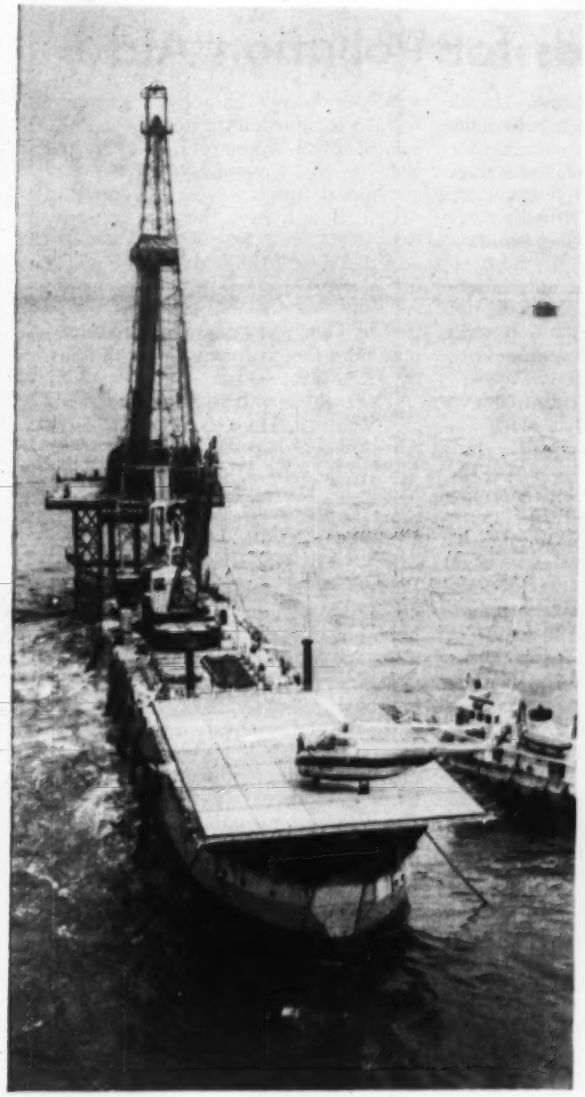
The report explained that "the projected $180 million of revenue bond financing necessary to finance its construction would not comply with all of the generally-accepted investment standards for such securities and the minimum $183.5-million southern crossing must, therefore, be considered marginal . . . particularly in view of the unfavorable money market conditions which exist today."

The 40-year issue also will have to bear a higher rate of interest than the Toll Bridge Authority has paid in the past, the report indicated. Probable interest rate would be 4¼% to 4½% with a substantial discount. The authority has sold previous issues at par.

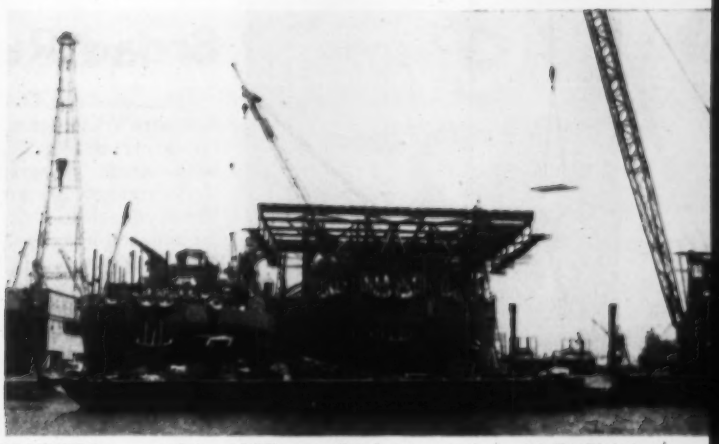
The report that the Toll Bridge Authority authorized last June was limited to feasibility studies at the 25-cent toll. However, Smith, Barney urged the authority to give serious consideration to imposing higher tolls on the proposed crossing. This probably would mean an increase in the present 25-cent toll on the existing San Francisco-Oakland Bay Bridge. Revenue for repayment of the bond issue will come from combined tolls from the two spans.

Norman C. Raab, projects engineer and chief of the Division of San Francisco Bay Toll Crossings, has said he believes the entire project could be financed on a 35-cent toll because of the excellent financial record of the authority and the strong growth potential of the Bay Area. But, he is not urging such a toll.

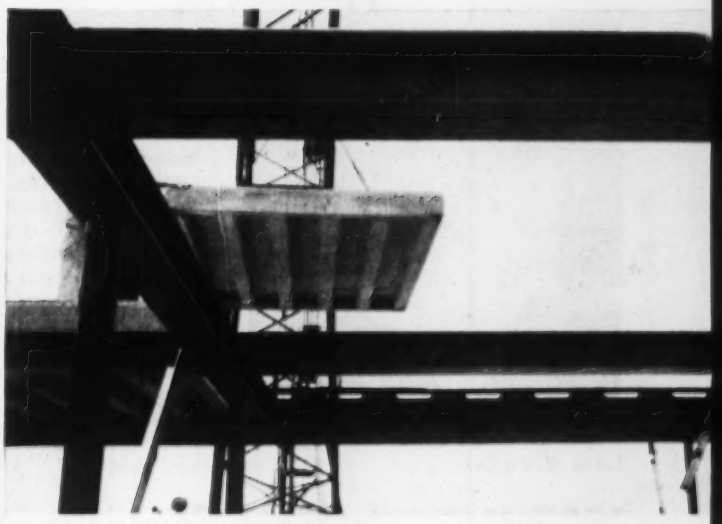
Raab pointed out that if revenues would not permit financing of the approaches by revenue bonds, they could be built by the cities or by the state.



Seagoing heliport serves offshore oilmen as . . .



TENDERS converted from LSTs were fitted two at a time with 70x50-ft landing decks of precast concrete on steel framing.



RIBBED CONSTRUCTION of slabs, plus use of lightweight aggregate, kept down weight of the 7x10-ft by 8-in. thick units.

Concrete Landing Deck Goes to Sea

In a seagoing adaptation of construction materials ordinarily confined to use on land, four converted LSTs that service oil-drilling sites off the Texas and Louisiana coasts now are equipped with prestressed, precast concrete landing decks for helicopters.

In the past, steel and wood decks have been used for this purpose. The switch to concrete is an attempt to answer the petroleum navy's need for a low-maintenance deck with high resistance to fire, weather and salt water.

Measuring 70 x 50 ft, each deck comprises 50 ribbed slabs 7 x 10 ft by 8 in. thick, supported on steel framing erected above the ship's stern. The pretensioned slabs are made of lightweight concrete containing expanded-clay aggregate. Weighing 2,170 lb each, they have six longitudinal ribs (one along each side, four spaced between) and a transverse header beam at each end.

For positive anchorage of the deck, embedded steel plates in the slabs are welded to the supporting steel frame members. Rubberized mastic seals the joints between slabs. Also embedded in each slab, four galvanized steel lifting hooks served first to speed handling and erection, now provide tie-down points for helicopters.

The decks are designed to withstand the 8,400-lb impact loads (per wheel) of Sikorsky S-58 helicopters. These craft shuttle between shore and drilling stations as far as 100 miles out in the Gulf of Mexico, maintaining messenger, freight and passenger service.

Erection of the slabs went fast. It took the Rackle Co., of Houston, Tex., only a day to install the deck on each of the four tenders. The firm manufactured the slabs at its plant 110 miles from the shipyard of the Levingston Shipbuilding Co., Orange, Tex., where the slabs were to be installed on the tenders; then trucked the sections to shipside and transferred them from trailer to boat by barge crane.

Guy F. Atkinson . . .

Louis R. Perini . . .

1957 Moles Awards

Atkinson, Perini to be feted by dam and tunnel builders

Guy F. Atkinson, 81-year-old board chairman of Guy F. Atkinson Co. of San Francisco, and Louis R. Perini—almost as famous as a contractor as he is as a baseball club owner—will be recipients of the 1957 Moles Award.

Perini, president of B. Perini & Sons of Boston, is the member-awardee, while Atkinson will receive the non-member award.

The awards will be presented at the organization's annual awards dinner, to be held at the Waldorf-Astoria Hotel in New York City next Feb. 7.

Perini's company has figured in many large tunnel and dam jobs in the East over the last 20 years. He is also owner (with his two brothers) of the Milwaukee Braves baseball team. Atkinson has long been engaged in major construction work, including Grand Coulee Dam and McNary Dam and Powerhouse.

President names advisory board, approves . . .

Broad Rules for Pollution Aid

Officials of the U. S. Public Health Service in Washington firmly believe the "propriety of federal aid" criteria (see box) recently approved for the sewage works construction grants program are liberal enough to include virtually every project certified by a state pollution control agency.

Although PHS views the criteria very broadly, it cautions that they are not meaningless, that the criteria were written to be utilized. Thus, in addition to guiding the Surgeon General in approving applications, they may also end up as an overall guide to state agencies in setting priorities. Municipalities are asked in the application form "how the project will meet criteria for determining the propriety of federal aid."

Approval of the criteria by the White House triggered the flow of paper work for the grants program under the new water pollution control act. Application forms should be in the hands of interested cities this week, mailed either from the PHS regional office or the state pollution agency, as desired by the latter. Regional PHS offices will apply the federal criteria initially.

Also available this week is a listing in the Federal Register (for Nov. 9) of some 10,000 cities, towns and sewerage districts and their sewage treatment needs. Being on the list constitutes a hunting license for a federal grant since unlisted projects cannot qualify. The list was compiled by state agencies and approved by PHS.

• **Advisory board**—President Eisenhower last week named the first Water Pollution Control Advisory Board, created last July by Congress to give policy guidance to Surgeon General Leroy Burney in administering the new pollution law.

The President reportedly is looking for another industry man to bring the Advisory Board to full strength authorized by Congress—nine appointees serving under the chairmanship of the Surgeon General.

The eight members named last week are: Charles R. Hook, board chairman of Armco Steel Corp., Middletown, Ohio; Milton P. Adams, executive secretary, Michigan Water Resources Commission; Daniel Bergsma, New Jersey Commissioner of Health; Morris B. Cunningham, Oklahoma City's Director of Public Works; Charles H. Elston, Cincinnati attorney who had led Republican support for the original federal water pollution act as a member of Congress in 1948; William A. Galbraith, director, Washington State Department of Conservation and Development; Howard P. Sawyer, a retired physician and prominent conservationist of Sanbornville, N. H.; and Carl D. Shoemaker, conservation consultant to the National Wildlife Federation, Washington, D. C.

Appointees will serve without pay, except for a per diem allowance when attending meetings. First meeting is expected in January.

Criteria for Propriety of Federal Aid

The propriety of federal aid pursuant to Section 6 (c) of the pollution control act (P.L. 660) will be determined by the Surgeon General on the basis of one or more of the following criteria:

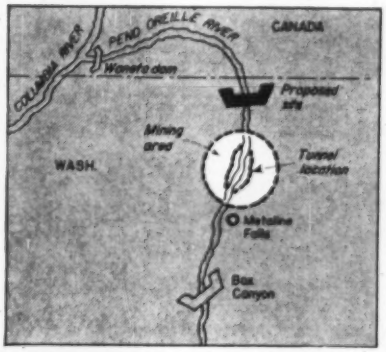
INTERSTATE, COASTAL AND GREAT LAKES WATERS—Whether the project is required to control pollution of interstate waters, coastal waters or waters of the Great Lakes (including tributaries of such waters contributing materially to the pollution of such waters), and such pollution is inimical to public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, or agricultural, industrial, or other legitimate water uses.

INTERNATIONAL TREATY OBLIGATIONS—Whether the project is required to control pollution in meeting international treaty obligations or agreements.

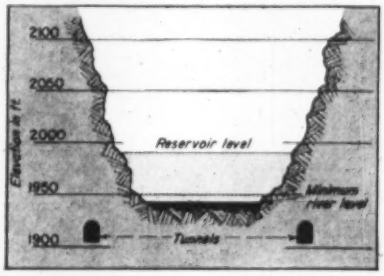
FEDERAL IMPACT—Whether the project involves a pollution problem substantially and adversely affected by (1) federal installations contributing to the total municipal waste loadings; (2) a water-use requirement involving national defense; (3) a federal water resource development; or (4) an influx of population to carry out federal activities.

PUBLIC HEALTH NECESSITY—Whether the project involves treatment works required to abate a serious public health hazard.

FINANCIAL BURDEN—Whether the municipality can demonstrate that the construction of needed sewage treatment works involves an extraordinary and excessive financial burden in relation to its economic resources.



TUNNELS drawn parallel to and . . .



BENEATH reservoir sides would . . .

Locate Water Leaks

A tunnel under each shore of the reservoir behind its proposed dam on the Pend Oreille River has been offered by City Light of Seattle as a safeguard to mining properties in the area against possible damage from water seepage.

Mining interests have threatened to oppose granting of a construction license by the Federal Power Commission for an as yet unnamed $140-million, 540,000-kw hydro project near the Canadian border. City Light hopes its scheme will overcome all objections to its license application.

The utility's plans call for a 7x10-ft tunnel on each side of the river, 100 ft below its bed and directly beneath the reservoir side. The tunnels would enable location and sealing of any faults through which reservoir water could drain off into adjacent or bodies. They would also serve as drains for mines of the area.

Initially, the tunnels would be two miles long, starting six miles above the dam. If mining operations continue northward, toward the damsite, City Light would extend the tunnels, always staying 3,000 ft ahead of the workings.

The dam itself would be 385 ft high and 975 ft long. Gross head would be 261 ft, utilized by six 90,000-kw generators at the outset. The reservoir would back water to the base of Box Canyon Dam.

Seattle officials are hopeful that construction can begin next summer. The project would require about six years for completion.

The search is on for . . .

Sturdier Asphalt Runways

Demonstration tests of heavy-duty pavements by the Corps of Engineers last summer are now said to have substantiated the judgment of the Air Force in barring use of flexible pavement—designed to Army Engineer specifications as modified up through December 1955—but the tests also prompted a new cooperative research program to develop asphaltic concrete mixes that will stand up under the most extreme conditions.

The advantages of having two acceptable materials—concrete and asphalt—are obviously too great to allow any other course.

At the invitation of the Flexible Pavement Branch, Waterways Experiment Station, Vicksburg, Miss., the Asphalt Institute is working with the Army Engineer laboratory on the decision of asphaltic concrete mixes that will meet the severest traffic and temperature requirements. Utilizing aggregates locally available in various parts of the country, the asphalt engineers aim to produce pavement mixes that will remain stable and rut-free in the hottest climates under repeated applications of maximum test loads by simulated aircraft landing gear, traveling in the narrow path that is typical of jet bomber traffic.

Answers to the problem have yet to be worked out, but the asphalt pavement people are confident they can produce mixes that will pass any test now contemplated.

• Changes Needed

Accelerated traffic tests with B-47 bomber loads on portland cement and asphaltic concrete pavements (in 200-ft tandem sections of taxiway at Kelly AFB in Texas last May and June) quickly demonstrated to the Army Engineers and the asphalt technologists of the country that design criteria now being used required immediate, drastic revision.

Asphaltic concrete pavement designed and constructed by the Corps of Engineers in accordance with its latest specifications began to show tire printing and slight lateral movement at about 5,600 applications of 100,000-lb single-axle load.

It rutted so baldly at about 36,000 applications—ruts about 1½ in. deep—that testing of the asphaltic concrete portion was stopped.

By contrast, the rigid pavement section—likewise constructed to Corps standards in a slab 20 in. thick—took the whole prescribed test of 120,000 load repetitions without distress.

Both sections were traversed by a tandem hookup of two simulated B-47 dual-wheel landing gears, carrying 100,000 lb each on tires with a contact area of 267 sq in. The test gear traveled a lane 7.4 ft wide in the center of the taxiway and distributed its trips uniformly over this narrow center strip.

Under actual field conditions, 75% of B-47 aircraft traffic falls within a 7.5-ft lane. It was this concentrated channelizing of B-47 traffic in narrow central tracks that caused the Army Engineers to raise their test requirement from 20,000 single-axle load repetitions to 120,000.

Pavement design criteria had been stiffened in June and December of last year to require increased thickness for both types of pavement and higher stability value for the flexible type, plus greater compaction for all substructure materials, including a thicker base course immediately under the bottom lift of asphalt surfacing.

So far as the asphaltic concrete itself is concerned, the stepped-up criteria proved inadequate in the Kelly Field test. The overall construction requirements called for a 5-in. asphaltic concrete surface and a 53-in. substructure under it.

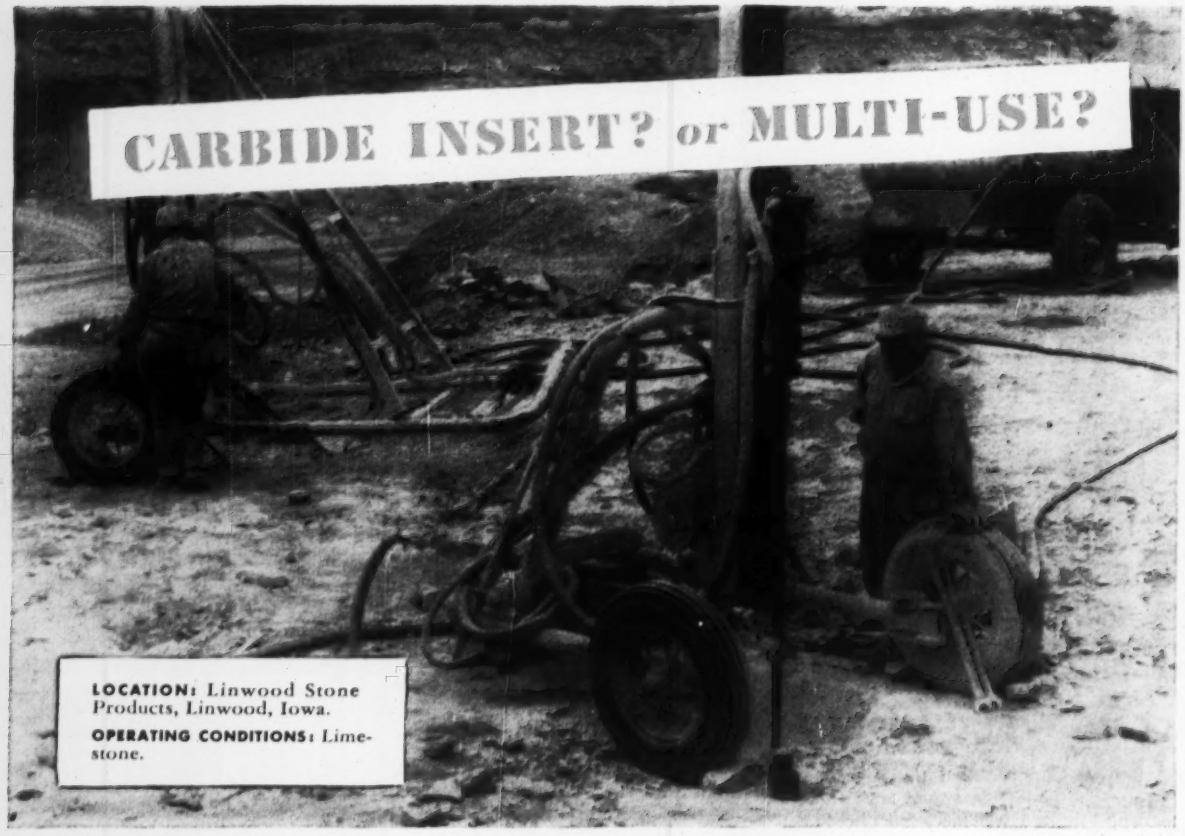
• Construction Good

In the words of the Vicksburg engineers who had charge of the test, the H. B. Zachry Construction Co. of San Antonio "did an excellent job of construction for both the rigid and flexible pavements and had no difficulties in meeting the design criteria." Zachry at the time was building both types of pavement under a construction contract for a runway, taxiway and large apron at Kelly AFB.

How well the asphaltic concrete in the pavement conformed to laboratory design—and how the same bituminous material behaved under test—can be determined by a reading of the accompanying table (see next page). Cores were taken from the asphaltic concrete at various coverages (round trips of the tandem rig, equivalent to four load applications per coverage) up to 8,605, for inspection and analysis. The table gives the data on stability, flow, density and voids, as derived from cores for each interval of traffic coverage.

Density of the asphaltic concrete increased rapidly under the accelerated traffic. The rig operated two ten-hour shifts for an average of about 500 coverages (2,000 load applications) per

(Continued on page 29)



Switch to wagon drills and TIMKEN® carbide insert bits cuts drilling and powder costs 1/3

. . . Reports Linwood Stone Products Co.

WHEN Linwood Stone Products Company switched from well drills to wagon drills, they also switched to Timken® DC and KC carbide insert bits. And they got extra depth before resharpening, fewer shattered inserts, and less binding in the small-diameter blast holes. The payoff: *drilling and powder costs were cut one-third.*

For small diameter blast holes, constant-gauge holes, and extremely deep holes—particularly in hard, abrasive ground—Timken carbide insert bits are your best investment.

But carbide insert bits may not be best for all your drilling jobs.

In ordinary ground, for instance, Timken multi-use rock bits are most economical. With correct and controlled reconditioning, they give you the lowest cost per foot of hole when full increments of steel can be drilled.

You can count on Timken rock bits to last longer because the special Timken shoulder union protects the threads from drilling impact. And both Timken carbide insert and multi-use rock bits are made from electric-furnace Timken fine alloy steel. No other rock bit manufacturer makes his own steel to give you extra quality control.

With Timken rock bits, you'll save time when you have to change from one bit type to another, because Timken carbide insert and multi-use rock bits are interchangeable in the same thread series. As the ground changes, you can change bits quickly and easily—right on the job.

For all your drilling jobs, profit from the more than twenty years of drilling experience you get when you call or write: Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit . . . for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

. . . How runway paving materials reacted to accelerated tests

	Asphalt Content, %			Stability			Flow			Density, Lb/Cu Ft		
	Surface	Upper Binder	Lower Binder	Surface	Upper Binder	Lower Binder	Surface	Upper Binder	Lower Binder	Surface	Upper Binder	Lower Binder
Lab design	5.0	3.5	3.5	2200	2450	2450	14	13	13	148.2	149.2	149.2
Plant lab	5.0	3.5	3.5	1508	2268	1591	10	9	9	146.9	149.0	148.1
Specifications				1800 minimum			16 maximum			.....	.....	.....
0 Coverages	5.0	3.5	3.5	444	756	318	11	11	13	143.4	146.3	144.3
24 Coverages				808	1453	900	10	9	10	146.2	148.7	147.4
300 Coverages				1119	2123	966	10	9	8	146.7	149.4	148.0
1012 Coverages				1292	2035	1157	10	8	7	147.7	151.1	149.7
2820 Coverages				.....	.....	.....	..	..	..	149.3	153.3	152.6
4370 Coverages										149.2	153.2	151.0
8605 Coverages				1317	1994	1535	21	19	12	149.9	153.5	152.1

	Voids, %						% Plant Laboratory Density		
	Total Mix			Filled					
	Surface	Upper Binder	Lower Binder	Surface	Upper Binder	Lower Binder	Surface	Upper Binder	Lower Binder
Lab design	4.2	5.6	5.6	69.0	59.0	59.0	....	.....	.....
Plant lab	4.7	5.8	6.3	71.8	59.7	57.4	....	.....	.....
Specifications	3.5	5.7	5.7	70.80	50.70	50.70	....	.....	.....
0 Coverages	7.0	7.4	8.6	62.6	53.0	49.1	97.5	98.3	97.4
24 Coverages	5.2	6.2	6.7	70.0	59.4	56.2	99.5	99.6	99.3
300 Coverages	4.7	5.4	6.3	72.2	61.1	57.7	100.0	100.1	99.7
1012 Coverages	4.1	4.6	5.3	74.5	66.6	62.4	100.5	101.4	101.1
2820 Coverages	3.1	2.9	3.4	80.0	75.1	72.3	101.6	102.9	103.1
4370 Coverages	3.2	3.0	4.4	79.2	74.6	66.4	101.6	102.8	101.9
8605 Coverages	2.7	2.8	3.8	82.0	75.9	69.6	102.0	103.0	102.7

day. By 1,000 coverages, the pavement density exceeded 100% of design value; and, when round-trip coverages by the tandem rig reached 8,600, pavement density had climbed to the range of 102 to 103%. With the asphaltic concrete squeezing tighter in the pavement and voids decreasing, the mixture "flushed" and showed plastic flow, according to the Vicksburg laboratory.

Asphalt Institute engineers were interested observers of the Kelly test through all its phases of design, construction and traffic operation. The traffic was applied in warm weather when pavement temperatures were generally high, ranging from 80 to 140 F.

Failure of the asphaltic concrete was in no way related to faulty substructure, the Army Engineers say. Their Flexible Pavement Branch reports that the subgrade, subbase and base of the flexible pavement section performed satisfactorily and would probably have withstood 30,000 traffic coverages (120,000 load repetitions).

• Answer Sought

The Army Engineers have good reason to believe that the Kelly Field problem can be licked.

After the asphaltic concrete failure at Kelly, the Flexible Pavement Laboratory set up additional tests of small panels in an existing test section at Vicksburg. So far, the laboratory has experimented with leaner mixes, with lower penetration asphalt and with rubberized asphalt. All three have stood up satisfactorily under 30,000 traffic coverages, except for cracking of leaner mixtures containing hard (low penetration asphalt.

Accelerated traffic used in the tests at Kelly and Vicksburg is probably more severe than will occur in actual service, the laboratory says. Nevertheless, asphaltic concrete is barred for the present on new construction of taxiways, runways and other areas where channelized traffic may be expected. In addition, all field offices of the Corps have been told to reduce the bitumen content of asphalt pavement in areas of channelized traffic for contracts now under way.

Vicksburg is going ahead with its effort to develop mixtures that will hold up under any number of accelerated load applications with allowance for tires of even higher pressure. The Flexible Pavement Laboratory and the Asphalt Institute think it will be only a matter of time until the problem is solved.

Michigan Airport Will Cost $10.7 Million

Wayne County, Mich., will start next spring on a $10.7-million construction program at its airport.

The program—to be financed by federal and state aid as well as from county funds—is designed to help take the squeeze off air facilities now servicing the Detroit area. Non-scheduled airlines along with Pan American World Airways already are using the county airport. And American Airlines is scheduled to begin operations there in January 1958 when the terminal is expected to be completed.

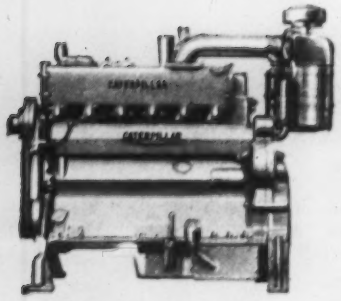
Bids for the project will be awarded in three sections.

• On Nov. 20 bids will open on the air-freight building. Estimated cost of the 15,000-sq-ft structure is $321,000. Completion date has been set for October, 1957.

• Also on Nov. 20, bids will be opened on a cantilever type hangar. Estimated cost $2.1 million, the hangar will be 160 ft x 400 ft.

• The $5-million terminal building is still in the design stage. But bids are expected to be awarded sometime next spring so that the 173,000-sq-ft building can be completed by January 1958.

Architect for the new facilities—which will feature some of the latest ideas in airport design—is Giffels & Vallet, Inc., L. Rossetti. The terminal building will include 48 single rooms with baths for layover passengers, plus conference rooms and facilities for meals on the same floor; a nursery, lounge, and space for concessions; several dining facilities; a paved parking area for 3,000 autos and a 600-ft-long heated "finger" with spaces six aircraft.



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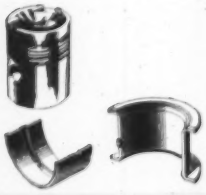


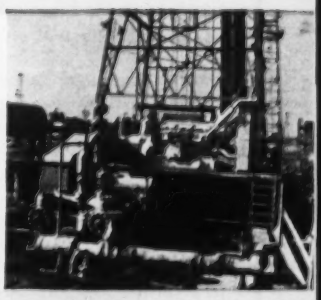
A quarter of a century ago, Caterpillar created mobile diesel power. For the first time, the power of the diesel engine was unleashed from its bulky foundations and put to work in the field—compact, economical. Here was diesel power of simple design, with no need for experts to operate and maintain. Here was diesel power with the lugging ability to knuckle down to the tough jobs.

The introduction of mobile diesel power was a tremendous advance in many fields. It provided efficient diesel power for tractors, motor graders, earthmoving equipment . . . for the work boat, the gin, the locomotive, the oil rig, the municipal plant . . . for *any* application in which steady, low-cost power is crucial. And everywhere, CAT* Diesel Engines proved themselves durable and dependable. They established Caterpillar as the leader in diesel engineering.

Today, hundreds of thousands of modern heavy-duty Cat Diesels are on the job in every corner of the world. And still the research continues. Study and experiment go ahead constantly in Caterpillar laboratories. Special testing machines help point the way toward new advances. Manufacturing techniques improve, too, in the world's largest diesel engine factory—where the quality of workmanship is the standard for the industry.

A modern world must have modern power—more and more of it. It is coming, in ever increasing quantity, from the production lines of Caterpillar, the leader.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



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DIESEL LEADERSHIP

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—interchangeable, adjustment-free fuel injection equipment

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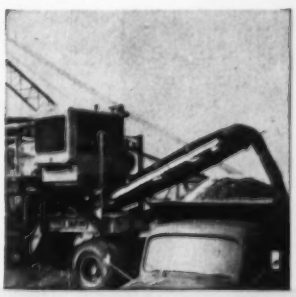
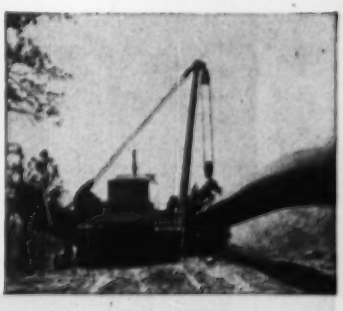
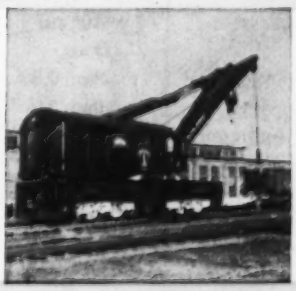
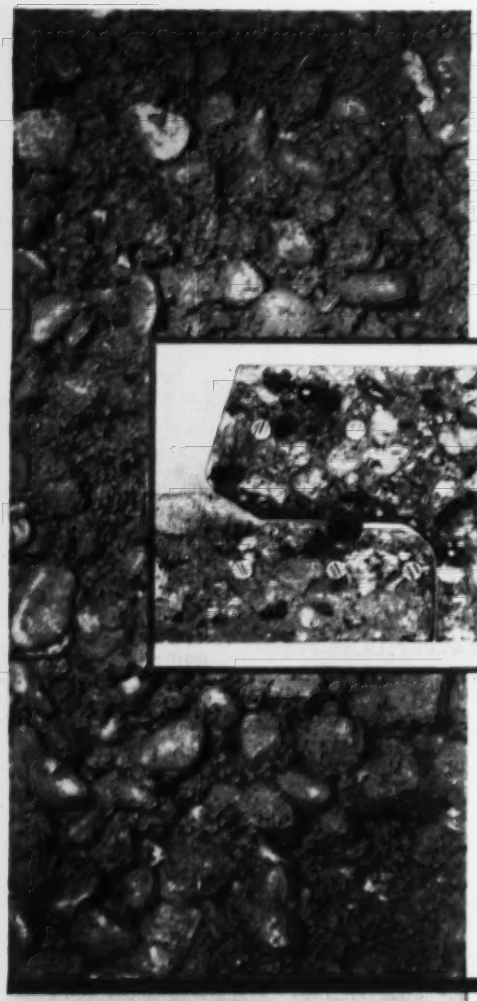
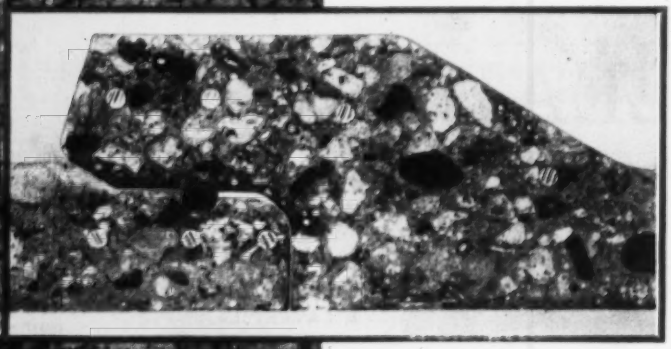







about

CEN-VI-RO CONCRETE



The CEN-VI-RO, dry, zero slump mix is used to produce an extremely dense impervious concrete with even distribution of coarse aggregate and cement mortar during short spinning and curing cycles.

High quality concrete is one of several factors making it possible to state that . . .

"CEN-VI-RO PRODUCES THE WORLD'S FINEST CONCRETE PIPE"

The following data are presented as verification and are the result of actual documented tests made by independent laboratories on job-spun pipe.

Comparative Table

CONCRETE CHARACTERISTICS OF SPUN PIPE	CEN-VI-RO PROCESS	USUAL METHODS
Compressive Strength	8000-13,500 psi	3000-6500 psi
Modulus of Elasticity	7×10^6 psi	5×10^6 psi
Slump	ZERO	More than 1"
Water Cement Ratio	Less than 0.30	More than 0.35
Moisture Absorption	Less than 3%	More than 4%
Distribution of Aggregate	Uniform	Segregated
Slurry on Inside Wall	Trace	Up to ½"
Dimensional Stability	Good (Low w/c ratio)	.....
Molding of Bells and Spigots in Forms	True in Detail With Base Mix	Special Treatment required

Please Write Us
For The Name Of The
Nearest Cen-Vi-Ro Plant

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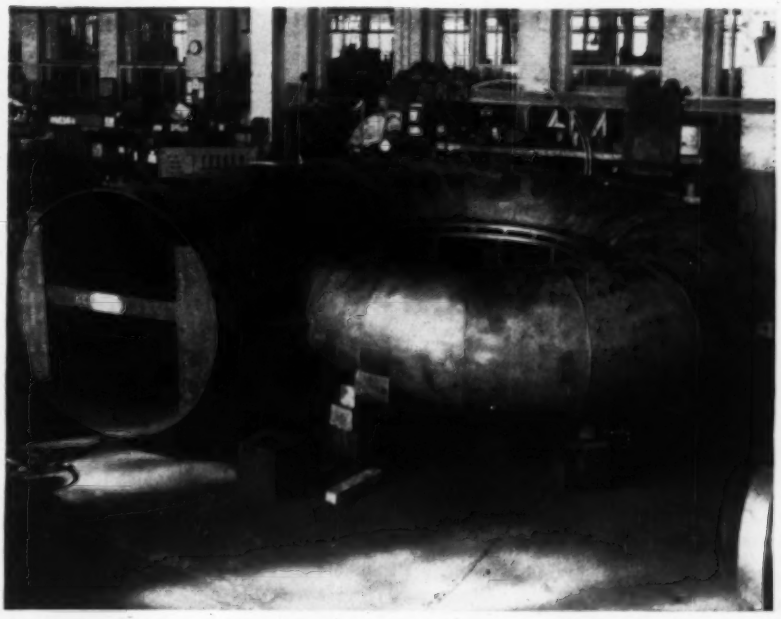
PIPE CORPORATION
8610 Atlantic Blvd. South Gate, California



All-welded turbine scroll cases show promise for . . .

New Use of High-Strength Steel

Use of high-strength alloy steel in the fabrication of scroll cases at three current hydro projects marks a new application of a material that is relatively new in construction.

Developed three years ago by U. S. Steel Corp., "T-1" steel has been used in bridges, pressure vessels, dredge pipelines, and truck bodies. Early this year, the high-strength alloy was specified for four turbine casings at Idaho Power Company's Brownlee Dam on the Snake River. Then in rapid succession it was called for in scroll cases at Noxon Rapids Dam on Clark Fork in Montana and Swift Dam on the Lewis River in Washington.

Evidently, the agencies involved are satisfied that the higher cost of T-1, and special welding requirements are more than balanced by the greater thicknesses of the usual flange-quality carbon steel employed for turbine casings.

For comparison, T-1 has a minimum yield point of 90,000 psi, minimum elongation of 18% and an ASME working stress of 26,250 psi. Corresponding figures for A285 flange grade C steel are 30,000 psi, 28%, and 13,750 psi. Scroll-case plate thicknesses can be reduced by about 50% with the alloy steel, making the net material cost run about equal to flange-quality steel.

Because T-1 is a quenched and tempered steel, special welding techniques are required. Electrodes must match the qualities of the plate. Transition sections between other materials and T-1 are necessary to minimize stress concentrations. There must be a higher degree of forming than with normal carbon steel. And in the actual fabrication, the use of torch heating to assist fitting at joints and preheating is not permitted.

But because of its reduced thickness, the alloy steel saves considerable deposited weld material, which results in an overall welding saving, despite the special considerations required in using the new material.

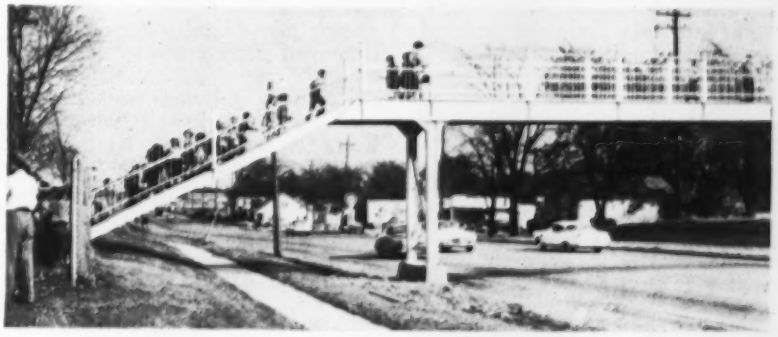
Field welding under varied temperature conditions is practicable and stress relieving is not necessary. The Brownlee scroll casings, to have an inlet diameter of 18 ft, will be site welded and not stress relieved. On the other hand, the Swift casings, with their 11 ft diameters, will be shop-welded and stress-relieved.

In place, the tough alloy offers superior abrasion resistance.

The next application of high strength steel in the hydro field will probably be in penstocks. It is understood that designers of several projects are seriously considering this use.

S. Morgan Smith Co. is manufacturing the turbines and scroll casings for Brownlee and Swift powerhouses, while Allis-Chalmers Mfg. Co. is doing this work for the Noxon project.

T-1 steel is produced by the developer and the Lukens Steel Co., the latter company being more active in the hydro applications.



Overpass Is Made of Prefabricated Steel

Michigan's first prefabricated highway pedestrian overpass in Lansing, Mich., is a 10-ton, 81-foot low-cost steel structure recently erected over state highway M-78 just west of the Lansing city limits. It will permit pupils of the school there to cross the busy four-lane thoroughfare near two large industrial plants.

After the concrete footings were placed, it took a six-man crew of the Planet Corporation, which built the structure, to put the bridge in place.

Ronald Reed, Planet corporation engineer, said the cost of the steel overpass, stairways and footings was less than half that of a reinforced concrete overpass for the same roadway.

Strictly for school purposes, the overpass is protected by gates at either end and a 4-ft, 6-in. railing.

Clearance is a minimum of 14 ft 5 in. above the roadway. Students climb a gently inclining stairway from one highway shoulder, walk along a 5-ft-wide pathway and down another stairway into the school play ground. An industrial-type deck provides safe footing under winter conditions.

Frank Groeneveld, president of the Planet Corporation, said the structure cost approximately $12,000.

Spotlight on the joint

Pipelayer tightens up two steel hoops securing neoprene gaskets and curved metal collar as . . .

Corrugated Metal Sewers Go In Along the

The first really large-scale use of corrugated metal pipe in interceptor sewer construction highlights the Middlesex County Sewerage Authority's $27-million clean-up of the lower end of New Jersey's Raritan River.

Over 37,000 ft of bituminous lined and coated metal pipe, ranging in diameter from 60 to 84 in., are being laid at a cost of $3.8 million. Metal pipe has not been used exclusively on the interceptor—switches to concrete pipe have been made, where high groundwater and questionable support conditions have been encountered, when corrugated metal pipe meeting specifications could not be obtained and when a contractor installed concrete after he had low-bidded on metal pipe.

The overall abatement plan, shown on the accompanying map, consists of 16.3 mi of corrugated metal and concrete interceptor, a 120-mgd pumping station, 3.6 mi of concrete force main, a 52-mgd (immediate capacity) chemical treatment plant and a 3.3-mi concrete and corrugated metal outfall, discharging into Raritan Bay. Construction began in September of last year and now stands about 45% complete; operation of the treatment plant is expected by October 1957.

• **Study pipe carefully**—Before allowing corrugated metal pipe as an alternate in the specifications, the consultants, Metcalf & Eddy of Boston (with E. Sherman Chase as partner in charge) and C. J. Kupper, engineer for the main trunk, examined the proposition critically. While not the first use of metal pipe for sanitary sewers (Middletown, Ohio—home of Armco Drainage & Metal Products Co. which supplied the Raritan job—has an extensive collecting system using corrugated pipe in diameters up to 108 in.), the Raritan Valley interceptor marks the first extensive use of large diameter corrugated metal pipe under completely competitive conditions.

Corrugated pipe was allowed as an alternate on Contracts 9, 9A, 10 and 12. Bids for the first three contracts had unit prices for metal pipe of $75 to $85 per lin ft.

All four contracts were awarded on the basis of the lower—by an average $10 a ft—metal pipe prices. Metal pipe totaled $1.2 million less than concrete over 19.6 mi of interceptor and outfall. However, the construction picture wound up somewhat differently.

At the outset, the low bidder for metal pipe on Contract 10 asked and received permission to substitute concrete pipe at the lower metal pipe price. He was awarded the job on this basis.

• **Recent switches**—Then just recently, after Contract 9 in metal pipe was well along, the contractor on Contract 9A requested permission to change to concrete pipe, stating that he was unable to obtain 84-in. metal pipe to meet job specifications. The switch was approved by the engineers and MCSA, and concrete is being installed at the price originally bid for concrete pipe.

A revision was made on the outfall, too. Instead of using metal pipe throughout, Contract 12 has been changed to concrete pipe for the inland portion. The balance of the outfall, which will be installed in a dredged channel along the bottom of the bay, will go in as originally awarded.

The outfall change was requested by the contractor, who felt that concrete pipe might give a better job in the face of great depths of cover and high groundwater. But another factor made the switch necessary. The outfall was designed to reach its capacity by about 1995, but revised flow estimates indicate capacity will be reached in 1975. Faced with the prospect of the outfall

Raritan

But before work started

Middlesex County Sewerage Authority spent several stormy years beset by legal, financial and organizational difficulties.

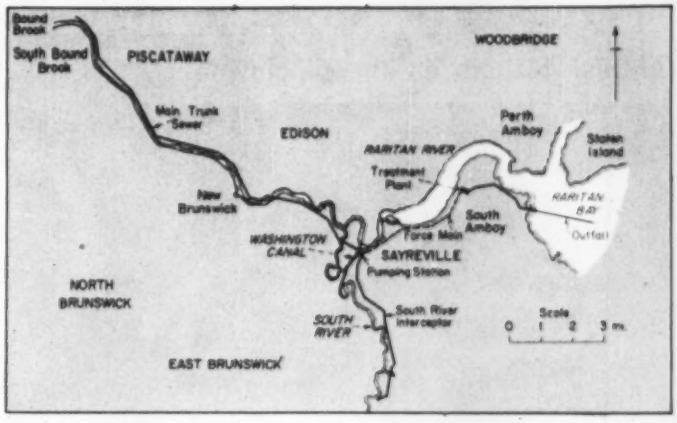
being outgrown, MCSA and its engineers had three alternatives:

- Plan future construction of a second gravity line using metal pipe, with the line parallel to its earlier counterpart.
- Build the outfall so that its initial capacity would be equal to ultimate needs, employing metal pipe of larger diameter.
- Employ concrete pipe on the outfall, adding about $70,000 to its cost. This could be a pressure line to take increased flows with the aid of pumps—installed in the future—at the treatment plant or could be paralleled with a second concrete pipe.

With limited 50-ft right-of-way, the first alternative was viewed as a dubious solution—installing a pair of large-diameter metal lines so close together would require extensive use of permanent steel sheeting and special backfill for proper side support. An alternate route for a second gravity line was not economically feasible.

The second possibility, larger diameter, was judged unsound on several counts. With no need for the increased capacity for almost twenty years, the capital cost and debt service which would be placed on the MCSA ledger 20 years before it was necessary would constitute an expensive insurance policy.

This and the uncertain availability



Location of project and . . .

What it took to get started

1948	Middlesex County Planning Board receives report from Consultant Elson T. Killam suggesting formation of sewerage authority.
August, 1950	Middlesex County Sewerage Authority brought into existence.
April, 1951	Freeholders advance $60,000 interest free money for planning, which initially includes parts of upper Raritan Valley (Somerset County).
May, 1952	MCSA tells its consultants to refigure cost of project, excluding Somerset firms and others who failed to meet a May 1 deadline for signing up as participants. (ENR May 15, 1952, p. 22)
June, 1952	Unique public relations program begins to rally public support behind MCSA program—sentiment against non-participants runs high. (ENR June 5, 1952 p. 40)
October, 1952	Raritan Valley clean-up is split in two sections as Somerset County group is organized upstream. Governor Driscoll declares that no controversy will be allowed to delay the stop-pollution plans. (ENR Oct. 16, 1952 p. 26)
May, 1953	Middlesex still stymied for lack of 90% of potential backing—3 communities and one industry still out of the fold, but wavering. (ENR May 29, 1953 p. 26)
July, 1953	Downstream clean-up assured as MCSA gains required 90% support with New Brunswick signing. (ENR July 16, 1953 p. 27)
November, 1953	MCSA retains Metcalf & Eddy, Charles J. Kupper, Elson T. Killam and Bogert & Childs to prepare detailed plans—to be ready within 10 months. (ENR Nov. 19, 1953, p. 28)
September, 1955	Design stage finished, construction begins with letting of $18.7 million worth of contracts.
October, 1957	Plant expected to be in operation.

. . . Interest focuses on the pipelaying

CLOSE-UP OF JOINT shows neoprene gaskets, half of the curved metal collar and the stainless steel hoops. Joint can be made with one gasket; contractor played safe with two.

of metal pipe in sizes considerably larger than the original 84 in. led engineers to choose the third alternative—concrete pressure pipe for the landward portion of the outfall.

• **Pipelaying sequence**—Laying of the corrugated metal pipe is the most interesting aspect of the job. Twenty-foot lengths, elongated 5% in vertical diameter, are delivered with shape-maintaining guy wires at each end. In addition to a smooth inner lining that is a minimum .125 in. thick, the asbestos-bonded pipe has a uniform bituminous outer coating .05 in. thick, over which is applied white wash to prevent injurious softening effects of the sun's rays before the pipe is laid.

Metal brackets are riveted to the pipe lengths—one at each third point—so that sections can be handled easily by a sling suspended from a crane boom. A stone blanket is placed and checked for proper grade before the pipe goes in:to trenches where rock or unstable bottom is encountered.

However, material from most trenches has been judged good enough for backfill on most of the line. Field control has kept one of its many eyes on clay content. Where clay exceeds 30%, granular material has been brought in for support and backfill, in addition to the normal stone blanket.

In the laying, adjacent pipe ends are butt jointed, the joints are made and the guy wires are snipped. Each joint consists of a neoprene band, 6 in. wide and ⅜ in. thick covered with two halves of an asphalt-coated steel collar shaped to fit the corrugations in the pipe. The assembly is secured by a pair of high-strength stainless steel hoops. With the approval of the project engineer, the contractor elected to use two neoprene bands to provide a better seal.

To insure that any breaks in the pipe lining or loosened rivets near the lifting brackets caused by handling will not result in leakage, bracket points are recoated inside and out, with a bitumen compound. Where used, stone bedding is carried up to 60 deg below the horizontal axis of symmetry to insure firm support. Backfill is then placed by a clamshell bucket and tamped in 6-in. layers to the top of the pipe. Under this load the pipe becomes near circular.

• **Early laying troubles**—As would be expected on a pioneering job of this type, a number of bugs were encountered. The first sections of metal pipe that were laid were not oblated, or were near circular when they were backfilled. Several weeks later heavy rains saturated the ground and caused excessive deformation of several sections. The 5% elongation of the vertical diameter has eliminated any problem caused by imperfectly tamped backfill.

The contractor has experienced difficulties in jointing the corrugated metal pipe, this job being the first use of the gasket-collar-hoop joint. In many instances, after the contractor felt he had tightened the nuts on the steel hoops sufficiently, he has had to return and re-tighten. On other occasions the steel hoop has been sheared apart when tightening the nut. Initially, the contractor appeared to be spending an excessive amount of time in making this seven-piece joint (1 gasket, 2 half collars, 2 hoops, 2 nuts—eight pieces counting the extra gasket used on this job), but the contractor now has the time per joint down to about 30 minutes.

• **Tough concrete line**—On Contract 10 covering the South River interceptor, a concrete line, the pipelayers met some tough going. Where the line intersects the South River, a 200-ft inverted siphon was required. Digging a 16-ft wide path for sewer pipe isn't much of a job ordinarily, but along the mud bottom of a murky river, the task takes on a different aspect. Working with diving equipment and a dragline supported on a specially constructed trestle, the crossing was made without the use of diversion structures.

Ground and water conditions along this line were such that much of the trench had to be unwatered by a well-point system. And sudden changes of stratification among the silts, clays and shales encountered have made progress irregular in spots. The portions of this line receiving industrial wastes containing acids that adversely affect concrete are lined with a bituminous coating.

• **Big hole in dry**—The high watertable has been a thorn in the contractor's side at the Sayreville pumping station, meeting point of the two collection trunks. The structure, much of which will lie well below the level of the nearby river, required an excavation roughly 250 ft square and 43 ft deep. And it looks even bigger to the contractor, who keeps it in the dry with two lines of wellpoints around the entire perimeter.

The station, now 50% complete, contains considerable concrete which had to be placed at levels quite a bit below the most accessible delivery point for ready-mix trucks. To do the job, 80 ft of 12-in. steel pipe was slung from a crane boom and used as a delivery chute. The mix, with slump ranging from 3 to 4 in., showed little separation in its trip down a 1 on 2 slope. Tests indicated an average 28-day compressive strength of 4,000 psi, some cylinders testing as high as 7,000 psi. Biggest day's pour so far was 390 cu yd.

To provide the 120-mgd ultimate design capacity of the station, 4 non-clog centrifugal pumps will be installed, each capable of 35 mgd. The pumps, whose full capacity is not expected to be needed for some time, will push the entire district's flow through a con-

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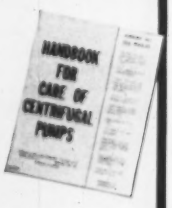

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. . . Water and mud make problems

CONCRETE PIPE sections of job run through some difficult country. Here well-points are used to dry trench. Parts of concrete force main are supported on pile bents in turn protected from shifting mud strata by steel sheet piling.

crete force main to the treatment plant 3.6 mi downstream.

• **Mud causes extras**—The 72 in. force main is the source of many of the current construction headaches. Mud strata extend in from Raritan River and underlie a layer of sandy loam. In many cases, the layer of unstable material extends down 30 or 40 ft, making excavation and backfill with stone prohibitive in cost.

While the job was set up on a lineal foot basis, unit prices for necessary excavation greater than 1 ft below grade, for steel sheetpiling, and for stone bedding greater than 1 ft in depth were included as separate items. The unit price for additional trench excavation with stone backfill was $8 per cu yd. Creosoted timber piles for pipe support were priced at $5 per lineal ft. Since the depth of unsuitable material determined the economic choice between pile support and stone backfill accurate determination of the limits of poor material was important.

Toward this end, E. T. Killam's resident engineer, Peter Homack, had borings taken at 50-ft intervals along doubtful stretches. Original explorations, taken at much greater spacing, did not give sufficient information.

On most sections of the force main, a 1-ft stone blanket—extending one-quarter of the pipe diameter on each side of the trench—provides ample support for 16-ft lengths of concrete pipe.

• **Chemical treatment**—Treatment plant construction is on schedule and according to Sol Seid, MCSA's chief engineer, the plant should be in operation by October, 1957. When the $4 million plant starts up it is expected to utilize nearly all of its initial design capacity—52 mgd of average daily flow. Future expansion, in the form of two additional clarifiers, will boost the capacity to 78 mgd. Hydraulic capacity of both plant and sewers is 115 mgd.

Chemical treatment, sometimes called intermediate treatment, will be employed for the composite industrial and domestic flows of the district. Grit chambers, a pair of 35 by 35-ft detritus-type units, are designed for removal of particles down to No. 50 mesh at peak flow of 117 mgd. Next unit, the distribution chamber, has a surface area of 330 sq ft and is 18 ft deep, providing a detention of 1¼ min at average flow.

Combination flocculation sedimentation tanks—4 of them—are the key units in the process. The inner 55-ft, the flocculation compartment, is 10 ft 3 in. deep, provides 20-min average flow detention. Effluent passes to an annular sedimentation compartment surrounding the floc chamber, 12 ft 6 in. deep and providing 2.1 hr detention. Weir

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. . . Outfall to be laid like cable

PLANT OUTFALL will run through this big cut (for plant access road), beneath Garden State Parkway and into Raritan Bay just beyond.

takeoff rate is 31,800 gpd per lineal ft of weir at average flow, increasing to 71,500 at 117 mgd peak flow. Outside diameter of the combination units is 130 ft.

• **Good neighbor policy**—Inflow to the plant, containing a high percentage of industrial wastes, will have a suspended solids content of 450 ppm and a 5-day BOD of 487. These conditions led Metcalf & Eddy to the use of chlorinated copperas and lime in the chemical process. The ferric hydroxide floc formed gave good results in laboratory studies—suspended solids removal equaled secondary treatment caliber and BOD reduction was of better-than-primary order. Dosage, both of lime and copperas, is 100 ppm in aqueous solution. Copperas, though normally too expensive for such use, is readily available from the plant's next door neighbor, National Lead Co.

The plant design also provides for prechlorination before grit removal and postchlorination at the outfall. Under peak flow, effluent will require 62 min to traverse this line.

Sludge will be handled in a pair of 80-ft-dia thickeners 16 ft deep, and 4 sludge storage tanks of the same diameter and 19 ft deep, giving a storage capacity of 11 days at average flow. Undigested sludge will be barged 25 mi out to sea.

A neat bit of doubling-up was accomplished in the lay-out of roads into the plant. Faced with a sizable excavation necessary to obtain reasonable access grades, engineers saw a chance to make double use of the cut by running the outfall close to the edge of the road.

• **Big show at outfall**—Dredging operations have been completed on the outfall's off-shore portion. Laying of the submerged part of the outfall will soon be under way. The contractor plans to join the 20-ft sections of metal pipe at the surface on a barge and pay them off as they are assembled. Outriggers will support the pipe between the barge and bed except for about 80 ft nearest the bed.

One construction difficulty to be overcome on the landward part of the outfall is that of tunneling under the Garden State Parkway. Having considered several possible methods, the contractor has decided to drive an air tunnel through the 50-ft high parkway embankment.

• **Knocking at the gate**—On the administrative side, MCSA director Chester A. Lydecker is busy settling the matter of new participants. A would-be complicated problem was settled in a very simple manner. Recognizing that the authority is chargeable by statute with preventing pollution of the waters within its boundaries and that greater plant volume will result in lower unit cost of treatment, the authority on June 19 decided to accept new participants within the district, on the same basis as original MCSA signers participate on.

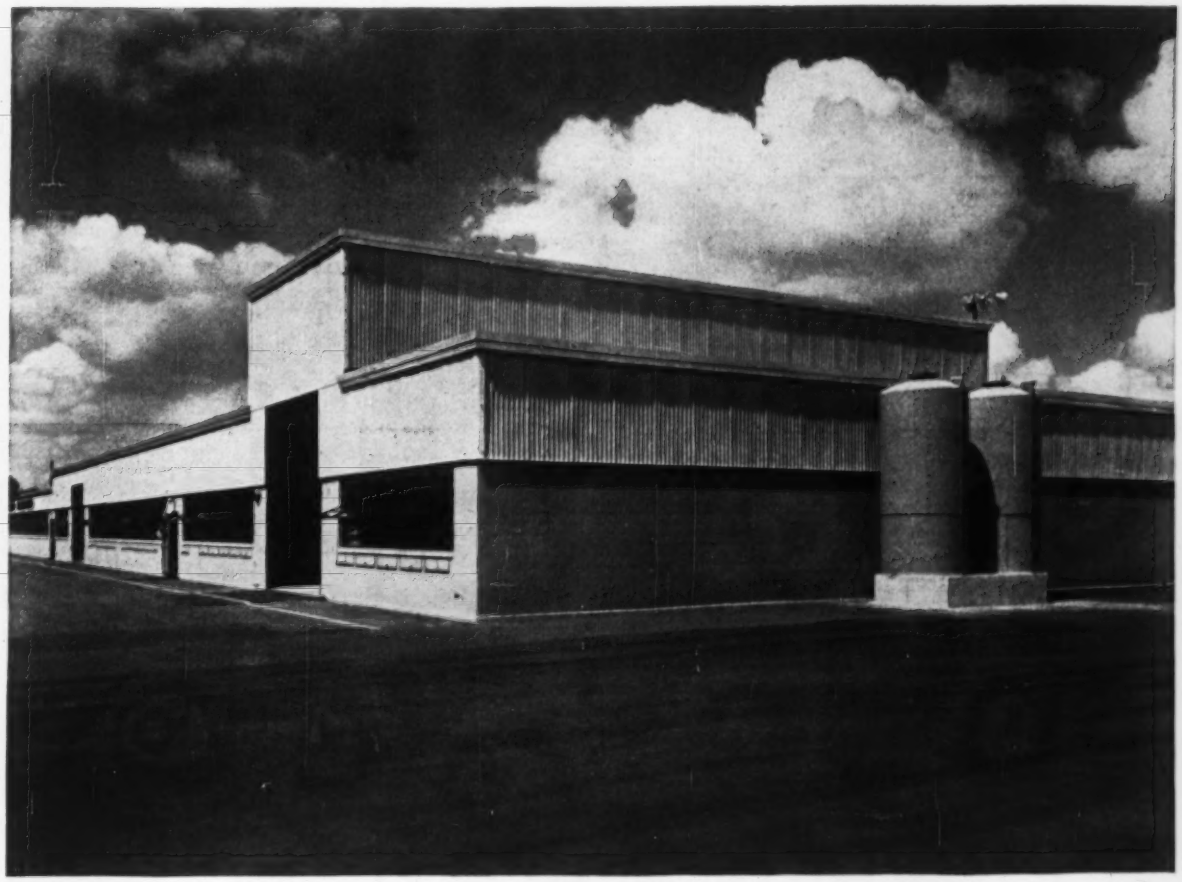
There are two conditions which new members must meet. First, the sewage must meet the approval of the authority as far as pH and other characteristics are concerned. Further, the new participants must make the connection to existing collection facilities. These qualifications do not seem to pose any serious obstacles—MCSA now has eight interested groups seeking to join its clean-up scheme.

With the opening of the Raritan plant, the long, long tale of a valley's clean-up will be half finished, pending action of the upstream Somerset-Raritan Valley Sewer Authority. The future for a clean Raritan looks bright, as Director Lydecker, expressing the newly formed policy on latecomers, voiced the authority's intentions: "We'll take all we can get, clean up from Bound Brook (upper limit of MCSA activity) down, and then press hard to have up-river pollution stopped."

A. A. Thomas is resident engineer for Metcalf & Eddy which in addition to its own contracts has responsibility for design approval and coordination of construction of the entire project. Other residents are Peter Homack, Howard Patton and R. Von Wagner for Elson T. Killam, C. J. Kupper and Bogert-Childs, respectively.

Job Breakdown by Contract

Contract	Contract Price	Contractor	Engineer
9—Main Trunk Sewer	$2,264,000	Berlandi Const. Co.	C. J. Kupper
9A—Main Trunk Sewer	4,176,308	Verona Const. Co., Inc.	C. J. Kupper
10—South River Interceptor	1,677,251	Elmhurst Cont. Co. & Charles E. Vachris, Inc.	Bogert-Childs Assoc.
11—Force Main	1,729,030	Verona Const. Co., Inc.	Elson T. Killam
12—Outfall	3,468,000	J. Rich Steers, Inc.	Metcalf & Eddy
14—Pumping Station (General)	597,170	Wallace J. Wilck, Inc.	Bogert-Childs
14B—Pumping Station (Plumbing)	422,237	Charles Simkin & Sons	Bogert-Childs
14D—Pumping Station (Electrical)	102,281	Ernest Jarvis & Co.	Bogert-Childs
15—Treatment Plant (General)	1,999,912	Thompson-Starrett Co., Inc.	Metcalf & Eddy
15A—Treatment Plant (Structural Steel)	470,711	Ottmer Iron Works	Metcalf & Eddy
15B—Treatment Plant (Plumbing, pumps etc.)	1,290,118	Municipal Service Co.	Metcalf & Eddy
15D—Treatment Plant (Electrical)	355,310	Standard Electric Const. Co.	Metcalf & Eddy



K&M Corrugated Asbestos Sheets, used as siding on the Operations Center of a southeastern utility company, complement the clean, modern lines of the building. These sheets are also used on a pitched roof, not shown in the photograph. Engineering and supervision of construction: Stone and Webster Engineering Corporation. Applicator: Whatley Roofing and Sheet Metal Works, Tampa, Florida.

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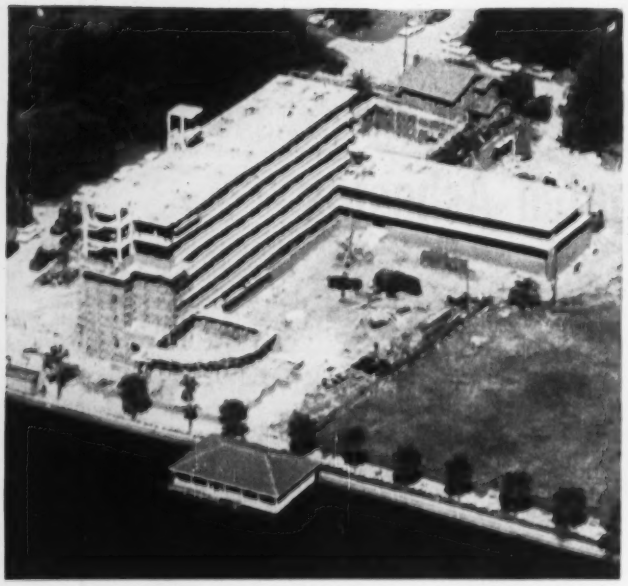

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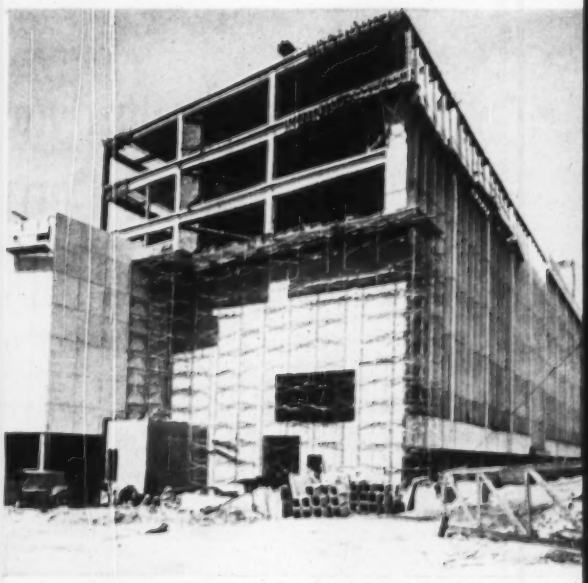

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Abrasive Rock, Asphalt Facing for Water

When Colorado Springs, Colo., launched its $18-million water expansion program two years ago, it resulted in the building of a dam (Montgomery Dam) incorporating several unique features of design and construction.

For one thing, its spillway crest—at El. 10,861 ft above sea level—is believed to be at a higher elevation than any other dam in this country. Designs called for a waterproof asphaltic concrete membrane on the upstream face. This, in turn, required special construction methods in screening and placing rock in the main embankment. The fact that the available stone was extremely abrasive added to the contractors' problems.

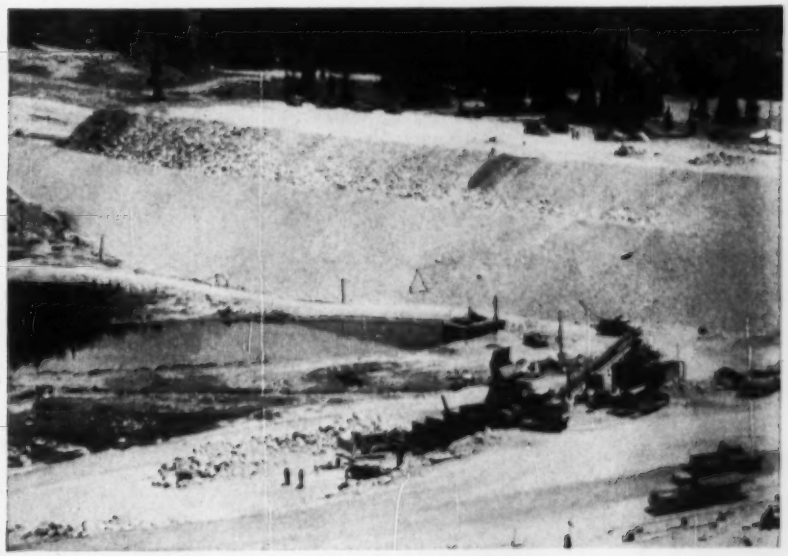
• **Scope of program**—Basically, the need for the water expansion program resulted from increased domestic demand stemming from a 50% rise in Colorado Springs' population within the past ten years. With the capacity of the existing Pike's Peak supply exceeded, the city was forced to undertake an $18-million expansion program to develop additional water supply 75 miles away on the western slope of the Continental Divide.

The project includes diversion dams, collecting pipelines and tunnels to bring the water to the Hoosier Tunnel piercing the Divide, a storage reservoir on the eastern slope below the tunnel in the watershed of the North Platte River, and a 30-in. steel pipeline to carry the water to the city.

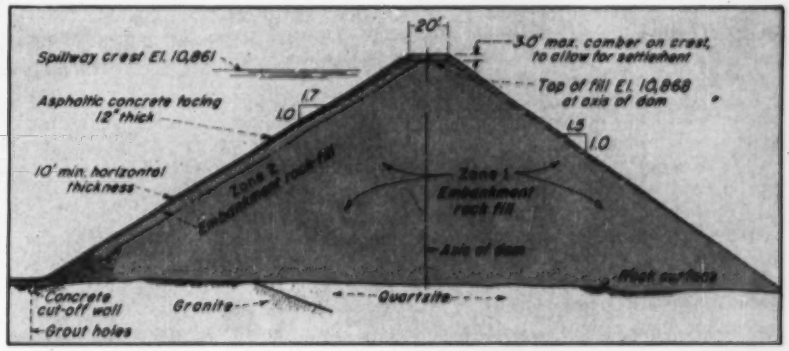
Flow will be at the rate of 11 mgd to 12 mgd, although the line is designed for a maximum flow of 18 mgd.

• **Key unit**—Montgomery Dam, the key unit in the project, will form a storage reservoir below Hoosier Tunnel. It is a rock-fill structure 113 ft high at the stream channel. The reservoir is comparatively small. It will have an initial storage capacity of 5,100 acre-ft, with provisions for increasing it later to provide storage for a total of 10,000 acre-ft.

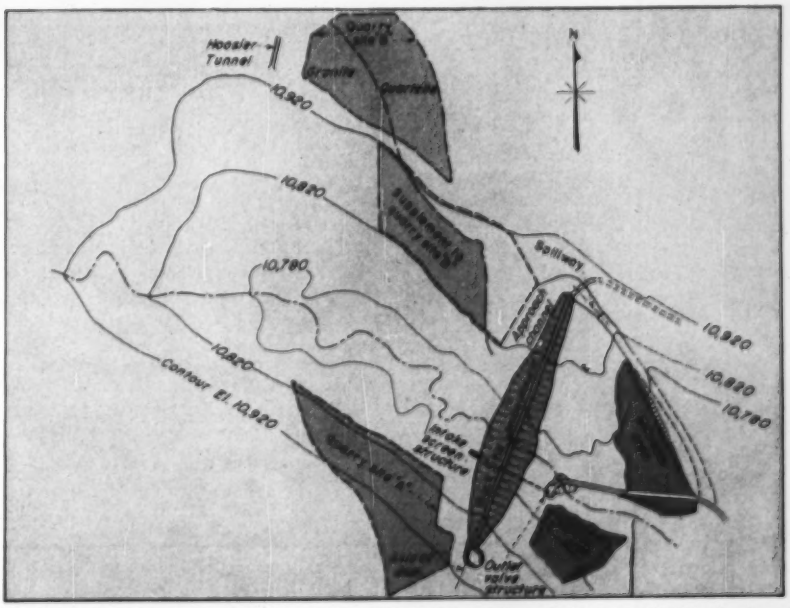
The dam is located on the middle Fork of the South Platte River about ten miles northwest of Fairplay, Colo. Its crest will carry a 20-ft roadway. The slopes of the upstream and downstream faces of the embankment are 1.7 on 1 and 1.5 on 1, respectively.



MONTGOMERY DAM on the western slope of the Rockies 2 miles above sea level is the key unit in Colorado Springs' $18-million water expansion program.



UPSTREAM FACE of dam will have a 12-in. thick blanket of asphaltic concrete to be applied on Zone II material during next year's construction season.



DAMMING the Middle Fork of South Platte River at crest elevation 10,861 ft above sea level, Montgomery Dam will store 5,100-acre ft of additional water for Colorado Springs.

Supply Dam

The structure contains a total of 654,000 cu yd of rock. It is 400 ft wide at the base and has a crest length of about 1,900 ft.

• **Tough granite**—Construction problems of first were indicated as mere quarrying and placing of the rock. But the granite encountered was extremely abrasive and contained more fines than anticipated, necessitating some middle-of-the-project re-engineering.

Because the dam will have an asphaltic concrete membrane facing on its upstream slope, it required a support base which can provide maximum drainage. Consequently, the main portion of the rock-fill embankment (Zone I) was required to be relatively free of sand, dirt or other fines which might

SHORT HAUL but a rugged one put rock trucks to a tough test as they are loaded with granite and quartzite boulders by a feeder-scalper which removes the fine material from the quarried rock by a wobbling action.

HOW THE WOBBLER WORKS: Its elliptical shaped bars, mounted alternately vertical and horizontal, have chain sprockets at

retain water and cause winter rupturing of the membrane facing.

The amount of fines in Zone I of the rock-fill embankment (see drawing) was limited to not more than 10%, while no fines less than 3 in. in size were permitted in Zone II. A special screen was used to remove the fines from the quarried material. These fines were then classified and material from ¾- to 3-in. in size was used to provide a layer, 9- to 12-in. thick, which serves as a base for the asphaltic concrete, waterproof blanket on the upstream face of the main embankment.

• **Rough equipment wear**—The problem of equipment wear was met through stepped-up maintenance. Shovel teeth were good for only two shifts—20 hours. Grousers of the track-type tractors on the job were at an accelerated rate, and tire wear on the big off-the-road rock trucks was rapid.

About one half of the quarried rock was clean enough to be placed directly in the embankment. The remainder, however, had to be processed to remove the excess fines.

The problem of separating the fines was whipped through installation of a so-called "Wobbler" screen. This combination feeder-scalper was developed by Universal Engineering Corp., primarily for heavy duty taconite mining on the Mesabi Range in Minnesota. On Montgomery Dam is was a contract-saver for the contractor.

Without the wobbler the job would have been much more complicated, according to Ken Willis, job superintendent: "It cut to one-sixth the time we might ordinarily require to complete our rock fill with specified rock."

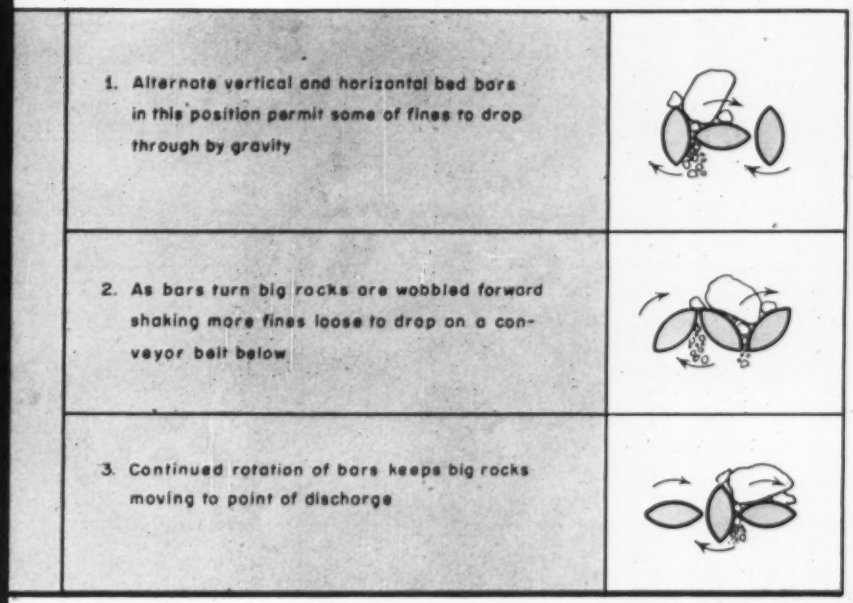
Originally the contractor had planned to use a rotating cylinder called a trommell screen to sift out the fines for Zone II aggregate. But when he ran into a situation where 70% of the material had to be run through the trommell, the machine was incapable of carrying the load.

But the wobbler handled tremendous chunks—its special manganese steel construction permitting continuous operation. Its oval-shaped rollers fed tonnage at a steady rate, screening rejects (which went to the dam) and fines over a ¾ in. screen and washer. There was little clogging.

ROCK FILL in Zone I of the main embankment was washed free of clay pockets by hydraulic jets delivering water at 1,500 gpm under a pressure of 75 psi.

• **How it works**—This is the way the wobbler screen works: A set of bars in the bottom of a hopper gives a rocking, tumbling motion to the quarry material dumped on them. The bars are elliptical in cross-section and set alternately vertical and horizontal. They maintain the same relative positions as they turn. The effect is a thorough churning that separates the fines which fall through the bars and are carried away on an endless belt conveyor. The oversize feeds to the end of the unit and is chuted into trucks and carried to the dam.

Material carried away on the belt by the separating action of the machine is carried to a shaker screen which sifts it through ¾-in. slots. About 30% of the rock handled by this feeder is fine material. About half the fines are sal-


1. Alternate vertical and horizontal bed bars in this position permit some of fines to drop through by gravity
2. As bars turn big rocks are wobbled forward shaking more fines loose to drop on a conveyor belt below
3. Continued rotation of bars keeps big rocks moving to point of discharge

either end, which are turned in the feeding direction through a gear box connected to an electric motor. The log chain (left view) looped around the bars keep long, thin rocks from dropping through.

vaged as ¾ in. material for use in the rock-fill, so the total waste from the quarry was only about 7½%. During a peak 20-hr day the wobbler handled an average of 250 cu yd or nearly 500 tons of rock and fines per hour.

• **Hydraulic sluices**—All material placed on the dam was high-pressure sluiced with two hydraulic monitors carrying a nozzle pressure of 75 psi, at the rate of 1,500 gpm. Water for the guns was brought by gravity flow through a 16-in. pipeline from the Platte River channel.

The rock was hauled from the quarry just upstream from the dam in 5- and 6-cu yd trucks. It was dumped in lifts up to 30 ft in height. The hydraulic jets, playing on the active face of the fill as the rock was placed, prevented pockets of fines from forming supporting pads between the larger rock. After the ¾- to 3-in. blanket of material was placed on the upstream face, it was smoothed by a shovel and then with a heavy steel drag. It was compacted by a vibratory roller, operated on a cable from a dragline working along on the crest of the dam.

Depth of the rock quarry was 200 ft at completion. About 900,000 cu yd of dirt and rock was moved to get the 730,000 cu yd of usable material required for the dam.

During good working weather the contractor employed a crew of 140 men on the job, working two shifts per day 6 days per week.

• **Grout curtain needed**—The dam is located on igneous and metamorphic rocks containing numerous seams and fissures. A grout curtain was developed along the heel of the dam under a concrete cut-off wall that extends 8 ft into solid rock.

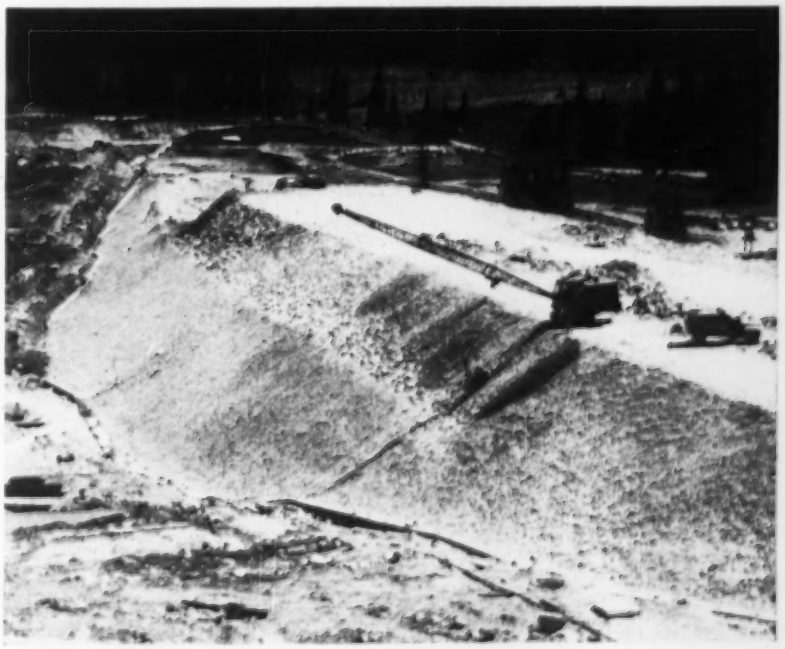
The deeper holes for the grouting operations extended 150 ft into the foundation material throughout the major portion of the dam. Other holes at lesser depth, with a minimum of 50 ft, completed the drilling pattern.

In general, the holes are 8 ft apart, but in some cases the spacing is limited to 4 ft. Grouting pressures of 200 psi were used in the deeper sections, and 35 to 50 psi—or as high as practicable—directly below the cut-off wall. Grouting operations required more than 25,000 sacks of cement.

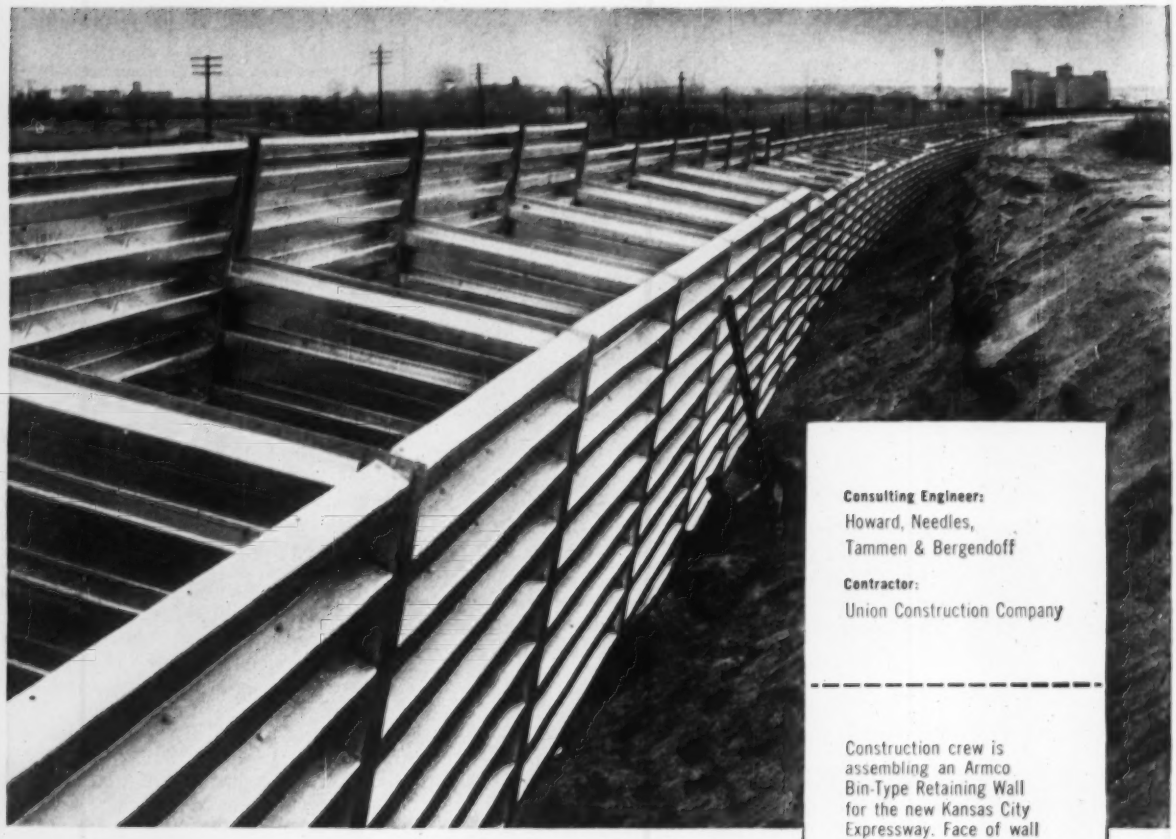
The waterproof asphaltic concrete facing on the upstream face will be placed next summer. It will require 26,500 sq yd of material 12 in. thick. The aggregate can be obtained from glacier deposits in the vicinity of the dam.

Fisher Contracting Co., Phoenix, Ariz., was the contractor on the rock-fill embankment and allied work. The total cost of this work was $2,260,000, and the estimated cost of the asphaltic concrete facing is $350,000. Fisher's contract was started in August 1954 and completed in late September this year.

Engineering and supervision work, in connection with the development of the supply on the western slope and Hoosier Tunnel, was done by the Department of Public Utilities of Colorado Springs. R. D. Nixon is general manager of the department and J. S. Nichols, superintendent of the Water Division. Black & Veatch, consulting engineers, Kansas City, Mo., were the engineers for the design and construction of Montgomery Dam and the 30-in. pipeline to the city. D. B. Gould, then with Colorado College, was employed by Blank & Veatch as consulting geologist, and F. W. Scheidenhelm, consulting engineer, New York City, as consultant on the design of the dam.



UPSTREAM FACE of rock fill dam has 10-ft layer of Zone II material placed by dragline, smoothed by heavy steel drag and compacted to serve as base for asphalt layer.



Consulting Engineer:
Howard, Needles,
Tammen & Bergendoff

Contractor:
Union Construction Company

Construction crew is assembling an Armco Bin-Type Retaining Wall for the new Kansas City Expressway. Face of wall totals 73,247 square feet.

A MILE OF ARMCO BIN-WALL
is used on Kansas City Expressway

Exactly 5,230 lineal feet of Armco Bin-Type Retaining Wall is being used for a single installation on the Kansas City Expressway to gain maximum elevated roadway width without encroaching on the adjacent railroad right-of-way. Eleven different wall heights were required, ranging from 5⅓ feet to 18⅔ feet.

Where Are Armco Walls Used?

With the new and wider highways of today, engineers are continually faced with the problem of making full use of right-of-ways without encroaching on adjacent property. To do this, it is often necessary to hold back fills or stabilize steep embankments. Armco Bin-Walls are ideal for such jobs.

Why Are Armco Walls Better?

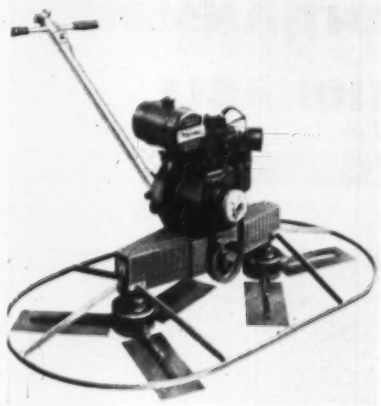
Armco Bin-Walls are of all-metal cellular construction, tightly bolted together to make an integral unit. Earth is backfilled into the bins to provide the necessary strength and stability. Dangers of cracking, breaking, bulging or overturning are minimized. Assembly is easy and fast.

For more data on sizes, engineering details and standard designs of Armco Retaining Walls, write us. Armco Drainage & Metal Products, Inc., 4716 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO BIN-TYPE RETAINING WALLS

ARMCO®

New Products



Twin-Shaft Finishing Machine Trowels Wide Concrete Area

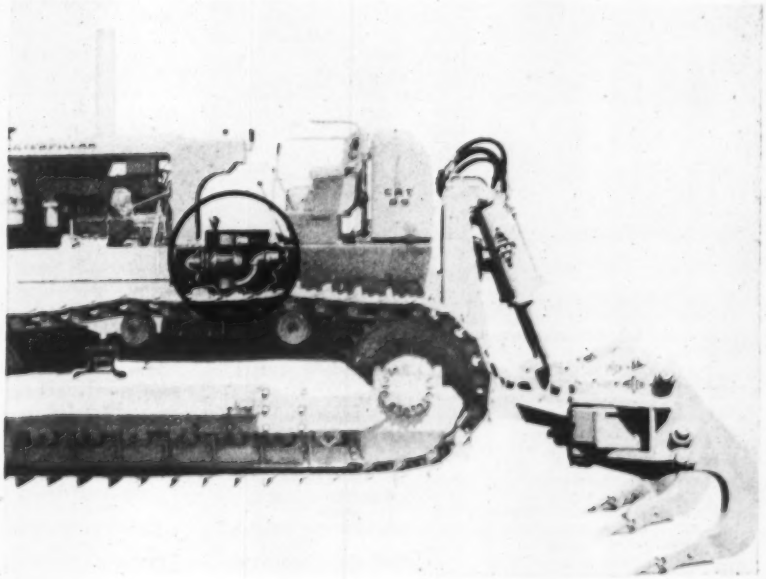
One pass with the Whiteman "Twin" floating-finishing machine trowels a concrete area 5 ft wide. Two sets of trowels rotate in opposite directions side by side, each balancing the torque generated by the other. This makes for smooth easy operation, according to the manufacturer.

Equipped with combination trowels for either floating or finishing, the machine has a knob at the top of the handle for changing trowel pitch. Whiteman Mfg. Co., 13020 Pierce St., Pacoima, Calif.

Vinyl Window Won't Burn, Shatter or Corrode

Seiberling Rubber is now marketing a plastic window claimed to be shatterproof and nonflammable. It is a polyvinyl chloride, made in clear and colored panes. Tradename of the product is Seilon. According to Seiberling, oil, grease, corrosive fumes and most acids do not affect the material. It is described also as self-extinguishing.

The manufacturer says Seilon can be machined, planed, sawed, nailed, cemented and welded—features expected eventually to sell the product in the do-



Direct-Drive Pump for Tractor-Mounted Ripper

Constant hydraulic control pressure is the package sold for a new direct-drive pump for the American's tractor-mounted rock ripper, now available for Caterpillar D-9 trailers.

Mounted at the engine power take-off, just ahead of the clutch and transmission assembly, it receives constant power while the engine is running. Hydraulic pressure is thus maintained without interruptions due to clutch action or to speed reduction through the torque converter. Use of flexible high-pressure piping eliminates joint leakage due to vibration, and permits easy access for tractor clutch readjustment without disassembly. The ATECO direct-drive pump is offered as optional equipment on all new HR-D9 rock rippers, and will be available in kit form for conversion of units now in use. American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.

WHY
Kensington track
LASTS SO LONG

There are two reasons why these tracks give you longer service, even under severest working conditions: (1) Kensington's new, improved design, and (2) superior, wear-resisting alloyed manganese steel.

New Design. Rigidity and near-perfect alignment are made possible by one-piece rail design and special heat-treated alloy pins pressed tightly in place under high pressure. Anti-shear lugs on grouser plate fit snugly over tie bar of link to eliminate loose plates, elongated bolt holes, twisting, weaving, and side-sway . . . the most common causes of bolt loosening and track trouble. Grousers are heavied-up at all critical points to better resist bending and breaking.

Yet, despite all these improvements, Kensington *Track Assemblies fit all standard, popular make crawler tractors.*

Steel with Stamina. Special, hard, tough, Kensington-developed alloyed manganese steels actually fight back against wear! They constantly develop extra surface hardness when exposed to friction, abrasion, and impact.

Kensington tracks come from the factory ready-assembled, easy to install.

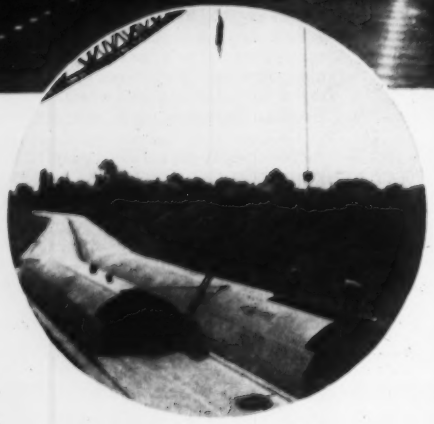
Discover for yourself how much Kensington tracks will lower your maintenance costs and improve your operating efficiency. Coupon will bring details.

Kensington
STEEL COMPANY
SUBSIDIARY OF POOR & CO., CHICAGO

KENSINGTON STEEL CO.
Dept. E, 505 Kensington Ave., Chicago 28, Ill.
● Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of tractor _____
Model _____ No. links per belt _____
Width of grouser _____
NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____
STATE _____

THE PERMANENT ANSWER TO AN OBJECTIONABLE DRAINAGE PROBLEM:



Manufacturers of Toncan Drainage Products

BARK RIVER CULVERT & EQUIPMENT CO.
Escanaba, Mich. • Ironwood, Mich.

BEALL PIPE & TANK CORPORATION
Portland, Ore. • Boise, Idaho

BERGER METAL CULVERT CO., INC.
Westminster Station, Vermont

BLUEGRASS PIPE & CULVERT CO.
Louisville, Kentucky

THE BOARDMAN CO.
Oklahoma City, Okla. • Tulsa, Okla.

CENTRAL CULVERT CORPORATION
Alexandria, La.

CHOCTAW, INC.
Memphis, Tenn. • Birmingham, Ala.

DOMINION CULVERT & METAL CORP.
Roanoke, Va.

EATON METAL PRODUCTS CORP.
Omaha, Neb. • Hutchinson, Kan.

EATON METAL PRODUCTS COMPANY
Billings, Mont.

EMPIRE STATE CULVERT CORP.
Groton, N. Y.

ILLINOIS CORRUGATED CULVERT CO.
Peoria, Ill.

JENSEN BRIDGE & SUPPLY COMPANY
Sandusky, Mich.

H. V. JOHNSTON CULVERT CO.
Minneapolis, Minn.

LOGANSPORT METAL CULVERT CO.
Logansport, Ind.

M & M HIWAY MATERIALS CO.
Columbia, Mo.

NORTH DAKOTA METAL CULVERT CO.
Fargo, N. D.

PACIFIC CORRUGATED CULVERT CO.
Temple City, Calif.

THE PEDLAR PEOPLE, LTD.
Oshawa, Ont.

REPUBLIC STEEL CORPORATION
Culvert Division
Canton, Ohio • Harrisburg, Pa.

SPOKANE CULVERT & FABRICATING CO.
Spokane, Wash.

THOMPSON PIPE & STEEL COMPANY
Denver, Colo.

TRI-STATE CULVERT & MFG. CO.
Tampa, Fla. • Decatur, Ga.

UTAH CULVERT COMPANY
Ogden, Utah

WISCONSIN CULVERT COMPANY
Madison, Wis.

WYATT METAL & BOILER WORKS
Dallas, Tex. • Houston, Tex.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

REPUBLIC SECTIONAL PLATE ARCH

When Big Creek in western Cleveland became contaminated and objectionable due to community expansion, protection of both health and property value demanded its permanent enclosure. In addition, the drainage structure needed would be called on to handle occasional heavy run-offs but could not exceed practical headroom limits.

To meet all requirements, twin Toncan® Iron Sectional Plate Arches with vitrified pavements were selected. Each provided a 12-foot, 6-inch span with only a 6-foot, 5½-inch rise. Each was 1677 feet long.

Of particular interest in the Big Creek enclosure was the use of salvaged Republic Sectional Plates. While the first 927 feet of each structure used new 8-gage plates, the remaining 750 feet were constructed of 900 3-gage plates, removed when an earlier job was enlarged. *These Toncan Iron Sectional Plates, which had been in underground service for 19 years, were still in excellent condition.* Speaking of the entire job, the erection superintendent said, "The fabrication was perfect."

Republic, and the drainage products manufacturers listed on the opposite page, offer a complete line of drainage products designed to give long-lasting service under all conditions. Resilient and flexible, they won't crack, crumble or spall . . . and are unaffected by impact, vibration or shifting fill. Various types include Corrugated Metal Pipe, Perforated Corrugated Metal Pipe, Sectional Plate Pipe, Corrugated Metal Pipe Arch, Sectional Plate Pipe Arch and Sectional Plate Arch . . . available in Toncan Iron and Republic Copper Steel.

Contact the Drainage Products Manufacturer nearest you for complete information. Or mail the coupon.

ECONOMY AND DURABILITY are key features of this Corrugated Metal Pipe Arch bridge which allows street to cross drainage arroyo—serving a large area. By using three parallel pipe arches, each with a 72-inch span and 44-inch rise, the city was able to handle the necessary volume within very low headroom. Cost was a fraction of that required for a steel and concrete structure.

FOR MAXIMUM SERVICE in heavy-duty handling operations, like the railroad car repair shop use shown here, insist on Republic Chain Products. As a basic steel producer, Republic controls quality from ore to finished product, assuring long-term dependability. Whatever your problem; hauling, hoisting, holding or towing, your Republic Chain Distributor can furnish the chain and accessories required.

LONG-LASTING, TROUBLE-FREE performance is yours when you use Republic Flexible Plastic Pipe to bring in construction water . . . or drain flooded excavations. Made of tough polyethylene, it resists abrasion and the effects of acids and alkalies. In addition, it is immune to electrolytic action. Lightweight and easy to cut or join, it can be used on job after job. For literature, mail coupon.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
Dept. C-1329
3114 East 45th Street
Cleveland 27, Ohio

Please send me further information on:

☐ Republic Drainage Products
☐ Chain Products ☐ Republic Plastic Pipe

Name _____ Title _____

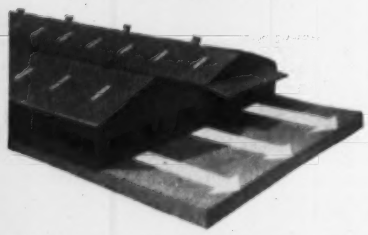
Company _____

Address _____

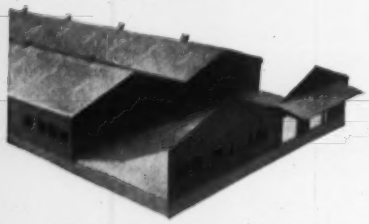
City _____ Zone _____ State _____

Don't stunt your business growth

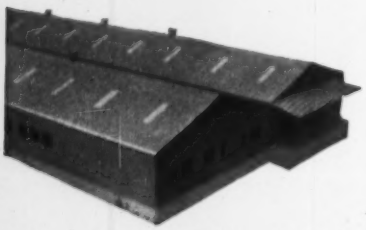
Build with Butler —the building that is easy to expand



Business expansion can be expensive—if it's not planned for. But when you choose a Butler building, you get "built-in" provision for expansion . . . fast . . . in any direction . . . usually at lower cost than initial construction.



Butler all-bolted construction cures growing pains. You unbolt the end or sidewall, move it out, intact, as far as you need, add the necessary structurals and tight-fitting cover panels, and bolt the wall back on.



Neat . . . fast . . . no strain . . . no waste. A minimum of new materials required. Need more space later? Do it again. There's no limit. It's just one of the reasons why Butler is your best building buy. Your Butler Builder can give you many others.

Consult the yellow pages of your telephone directory for name of your Butler Builder, or write on your company letterhead for informative brochure.

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7418 East 13th Street, Kansas City 26, Missouri

Manufacturers of Steel Buildings • Oil Equipment
Farm Equipment • Dry Cleaners Equipment
Outdoor Advertising Equipment • Special Products

Sales Offices in Los Angeles, Richmond, Calif. Houston, Tex. • Birmingham, Ala. • Minneapolis, Minn. Chicago, Ill. • Detroit, Mich. • New York, N. Y. Burlington, Ont., Can.

it-yourself market. For now, limited production is for commercial users. Thicknesses are .1¼, 1½ and 1¾ in. Seiberling Rubber Co., Newcomerstown, Ohio.

Bond-Breaking Agent Aids Concrete Appearance

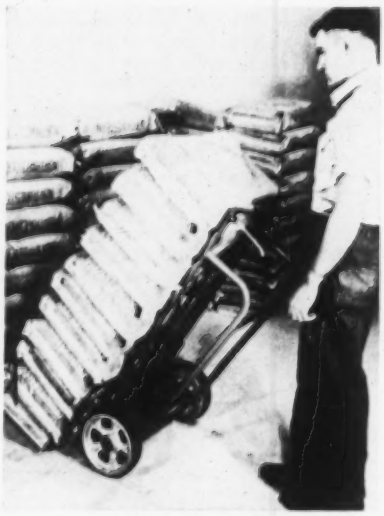
A concrete-curing and bond-breaking compound introduced under the trademame Tux is said to contam no oil, wax or paraffin. As a result, paint is reputed to adhere well to the concrete surface. Tux-treated units also "break clean," free of stains and uniform in color, according to the manufacturer. Hunt Process Co., Inc., 7012 Stanford Ave., Los Angeles, Calif.

Handtruck Has Hand Brakes Also Locks in Tilted Position

A new handtruck, designed primarily to handle grain, fertilizer, cement and other bagged materials stored on pallets, is said to have several unusual features. It is equipped with a special shoe that automatically locks it in a tilted position with a full load. The shoe also allows easy tipping action after the truck has been moved into the load in a vertical position.

An unusual fork design to the loading shoe allows use of an inexpensive pallet with a reinforcing center cleat.

The truck is so designed that when the load is tilted to approximately 45 deg, it reaches a balance point at which the load will rest. It is available with two-wheel brakes for safe handling, on ramps. Valley Craft Products, Inc., 770 Jefferson Ave., Lake City, Minn.



Reinforced Plastic Used For Ladder Side Rails

Laminated plastic construction similar to that used for automobile and boat bodies is now applied in making ladders.

Putnam Rolling Ladder Co. has developed a model with reinforced plastic side rails and lightweight metal rungs.

The sandwich construction of the side rails is glass-fiber-reinforced polyester resin (American Cyanamid's Laminac), which is molded over a core made of balsa wood. Either aluminum or magnesium rungs are plastic-welded to the rails.

Qualities claimed for the ladders include lightness (2 lb per ft), nonconductance (120 kv failed to break down resistance between rungs), and immunity to corrosion (the same plastic is used to line tank cars carrying active chemicals).

The ladders are made with either straight or tapered rails. Available types and sizes are: standard or heavy-duty single ladder, 8-20 ft; standard extension, 16-28 ft; heavy-duty extension, 16-40 ft. Putnam Rolling Ladder Co., 32 Howard St., New York 13, N. Y.

(New Products continued on page 54)

"KAISER ALUMINUM ROOFING SAVED US TIME AND MONEY"

—says Mr. Dan C. Sill, Kern Rock Co., Bakersfield, California

"Our building made with Kaiser Aluminum Industrial Roofing sheets gives us outstanding service at remarkably low cost," says Mr. Sill.

"We are especially pleased with the savings in both material and labor that these Kaiser Aluminum sheets made possible. The sheets are 48 inches wide and .024 inch thick by ⅞ inch depth of corrugation. Those specifications allowed us to use five-foot purlin spacing spans, figuring 35 pounds per square foot uniform loading based on a safety factor of two.

"Also, our maintenance costs are way down because the aluminum will never rust. Our 80,000 square foot building will never need painting or expensive maintenance of any kind.

"We are so completely satisfied with this building that we are now putting up a similar, 68,000 square foot building. Of course, we will use Kaiser Aluminum Industrial Roofing.

"For quality roofing at low cost, we recommend Kaiser Aluminum."

The experience of the Kern Rock Co. is typical. Whatever you are building, figure first in Kaiser Aluminum for better value at lower cost.

For A.I.A. File and complete information, contact any Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office*, Palmolive Bldg., Chicago 11, Illinois; *Executive Office*, Kaiser Bldg., Oakland 12, California.

Kaiser Aluminum

Industrial Roofing and Siding

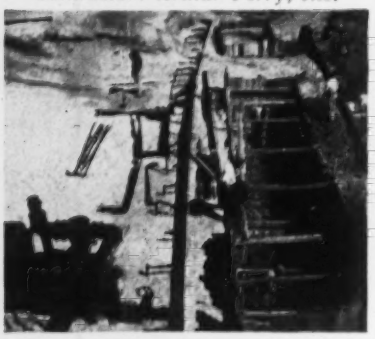
See "THE KAISER ALUMINUM HOUR." Alternate Tuesdays, NBC Network. Consult your local TV listing.

HOW TO HANDLE
WET JOBS

NEW SEA LIFE HOME
FOR MARINE STUDIOS

Marineland, Fla.

Contractor: Arthur Perry, Inc.



50 POINTS, 240-ft header: What volume could be handled by a well-point system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.

3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume—it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

. . . New Products

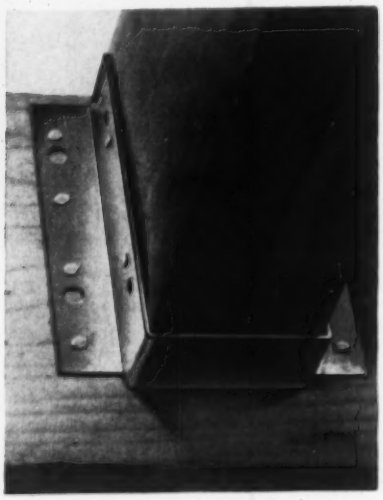
Trailer-Mounted Portable Steam Plant

A trailer-mounted steam generator that offers closest control for pile driving applications, according to its manufacturers, provides fully modulating control from low-fire to high-fire with a single control mechanism.

The PS-125 portable steamer delivers 4,300 lb per hr of dry steam in 30 minutes from a cold start making it especially useful for pile driving, because it gives single and double acting hammers full rating in maximum number of blows through the pile-driving cycle. Versatile in application, the PS-125 provides steam for heating asphalt, winter thawing, cleaning of equipment or heating buildings.

Fire-tested at the factory, the unit is insulated with glass fiber and fully weather protected. The tractor-mounted model is readily mobile, but it comes on skids, as well. It carries its own fuel supply—132 gal of No. 2 fuel oil in two fenders—and its air-atomized burner has been field tested in thousands of applications, according to a report from the producers.

The engine is rated at 22 hp continuous duty at 1,800 rpm, with hand throttle control at speeds below 1,800. CLEAVER-BROOKS CO., 326 E. KEEFE AVE., MILWAUKEE 12, WIS.



Flush Joist Hanger Line Gets Double-Width Model

The F. D. Kees line of flush-type joist hangers is now augmented by double-width hangers for two 2-in. joists or one 4-in. joist. Recommended long-term loading per hanger is 1,200 lb. Made of 14-ga galvanized steel, the hangers are packed 25 in a case—shipping weight 26 lb. F. D. Kees Mfg. Co., Beatrice, Neb.

Rotary Drill Uses Air And Water for Operation

A new unit in the Davey Compressor rotary drill line is the Model M-SAL, which can drill 24-ft ledges without changing steels. Suitable for mounting on any standard truck, the unit uses both compressed air and high-pressure water for drilling. It has a rated capacity of 6¼-in. holes up to 600 ft with air, and 1,500 ft with mud. In operation, it is said to affect substantial savings in drilling costs.

The new drill is recommended for shot- and blast-holes, structural testing, core drilling and water-well operations. Weight of the complete unit is about 26,000 lb. ROTARY DRILL DIV., DAVEY COMPRESSOR CO., KENT, OHIO.

Why buy more machine than you need ?

THE 3/4-YD. LORAIN 25A

gets your job done and makes you money!

There are many ¾-yd. shovel-cranes on the market. Some are "light weight"—at a price. Some are "heavy-duty," deluxe, more costly. The Lorain-25A is neither. It is a true, full-value, ¾-yd. *general-purpose* machine that will surprise and satisfy you with its ability to handle a wide range of tough jobs. It is an all-around, fast, serviceable machine—not over-priced, not over-engineered, but containing many quality features that give you plenty of pep and power, plenty of long-life endurance.

If you want a real ¾-yd. machine that will handle all of your day-to-day requirements with ease and still have enough "stuff" to handle your occasional "extra tough" jobs—the Lorain-25A is your machine. You don't have to pay the deluxe, heavy-duty price to get most of the big-machine features. You don't have to buy more machine than you really need to get the design and quality construction you know you must have to get long life, profitable operation.

Feature for feature—value for value—dollar for dollar—you'll find the Lorain-25A gives you the most for your money in the general-purpose ¾-yd. class. It is available as a ¾-yd. shovel—as a hoe with 16' and 19' boom, with 30" or 40" dippers, or as a dragline, clamshell or crane. You owe it to yourself to check the "25A" in operation. Call your Thew-Lorain Distributor and ask him for a job-visit demonstration!

THE THEW SHOVEL CO.
LORAIN, OHIO, U.S.A.

EVERY DAY . . . these "25A" features make money

Here are important features that pay dividends the minute your operator takes over the control of a Lorain-25A. They mean easier operation, faster cycles, reduced operator fatigue, higher production. Ask your operator to check them, too.

- Big, 18" swing clutches—20% larger, fewer adjustments, longer life
- "E-Z" operating controls—effortless action, fast response
- "Hydra-Ease" control of crawler steering, tread lock, house lock and shifting of swing-travel jaw clutches
- 2 crawler speeds in both directions
- 12' 6" crawler—stable, no "nosing-in"
- 4-way position tread and travel lock, hydraulically operated
- Independent travel available, a big advantage on dragline and hoe operations
- New, square-tubular-chord clamshell and dragline boom—lighter, stronger; greater lifting capacities; greater bucket operating ranges
- Steel shell lagging for bigger cable on drag-in drum
- Power load lowering is standard

OVER MANY YEARS . . . these features mean long life

Consider these features in terms of a long-term investment—features that keep your Lorain on the job more hours over more years.

- One-piece, all-welded, truss-reinforced, rigid turntable bed—assures lifetime alignment of mechanism
- 19 anti-friction bearings on clutch shaft
- Hoist drums on anti-friction bearings
- Oil-enclosed cut gears on turntable
- Oil-enclosed crawler travel mechanism
- Dragline fairlead sheaves on anti-friction bearings
- Sealed idler rollers on anti-friction bearings available for crawler
- Treads with replaceable tread pin bushings available for crawler
- Choice of 22" or 29" crawler treads
- Fully convertible to shovel, crane, clamshell, dragline or hoe—extra job and profit possibilities
- Choice of 16' and 19' hoe booms
- Hoe dippers available in 30" to 40" widths

THEW LORAIN®

THE NEW BARCO VIBRA-TAMP*

* Companion Tool to the Barco Rammer, famous for Deep, Penetrating Soil Compaction!

A Versatile Tool for MAXIMUM COMPACTION of

1. Granular Base Materials
2. Bituminous Surfacing

EFFICIENT—one man does the work of many with VIBRA-TAMP. Operates in any weather. Works flush against curbs, foundations, and walls.

ECONOMICAL—to buy, operate, and maintain! No special tools required. Saves your bigger, costlier equipment. Tamp up to 750 sq. yds. per hour.

SAFE—moving parts fully enclosed. Special vibration dampers reduce operator fatigue. Simple controls. Handle adjustable to comfortable height.

DURABLE—simple design and quality construction keep VIBRA-TAMP on the job day in and day out. Carburetor unaffected by vibration.

VERSATILE—use VIBRA-TAMP for all kinds of work—wherever low cost is a prime consideration. Take VIBRA-TAMP on the big jobs for hard-to-reach areas. Use it for patching streets, driveways, and roads. VIBRA-TAMP has no economy equal—a real work-horse on sand, gravel, soil, chippings! *Ask for new catalog No. 630.*

Worldwide Sales and Service

BARCO *Serving Industry Since 1908*
MANUFACTURING COMPANY, 514M Hough St., Barrington, Ill.

Publications

Steel products—This 4-page folder is a catalog of bulletins. Along with photos and brief descriptions of various steel products for construction, it identifies by number more inclusive bulletins available on the various individual products. Listed items include guard rail, forms, flooring, pipe and pipe arch, steel buildings, and sectional plate. United Steel Fabricators, Inc., Wooster, Ohio.

Roof construction—Insulation clips, Koroseal vapor barriers and a nonflammable adhesive for securing the barrier to the deck are described in an 8-page booklet on Lexsuco roof construction. Photos, drawings and cutaway sketches illustrate the products and their application. Included are 4 pages of suggested specifications. Lexsuco, Inc., 4815 Lexington Ave., Cleveland 3, Ohio.

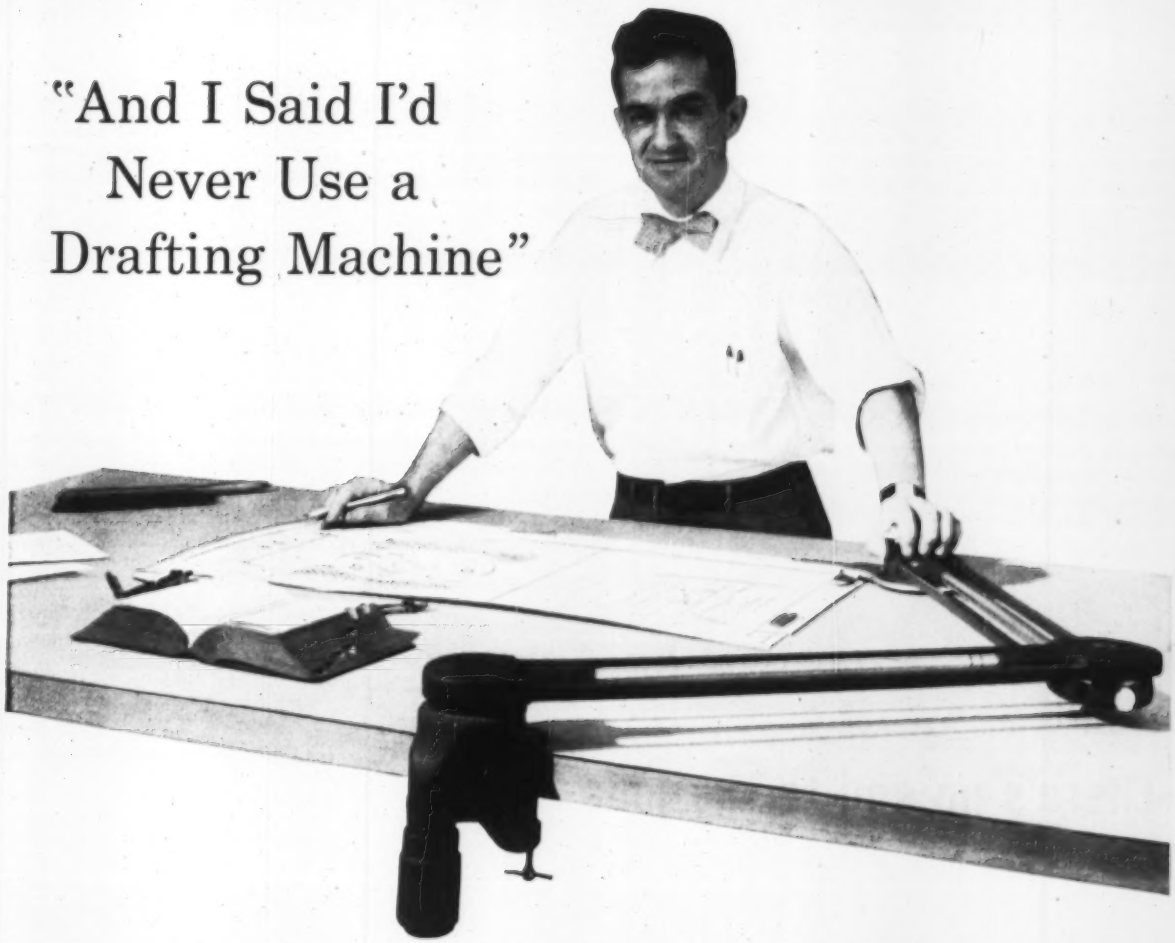
Clay products—Designed for quick reference, a new four-page bulletin, "Vitrified Clay Products", has recently been published. Fully illustrated, the bulletin contains complete data specifications and dimensions on a wide variety of clay products. Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio.

Steel forms—Milcor Ribform, a permanet steel form product for short-span concrete floor and roof slabs, is described and pictured in a 4-page brochure. Physical properties, span and floor-load tables and suggested specifications are included. Catalog 325. Inland Steel Products Co., Box 393, Milwaukee, Wis.

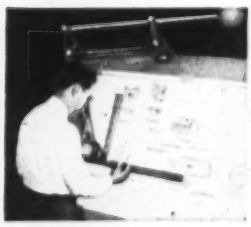
Turbidity in fluids—Data sheet contains specifications and applications of the Kaye Development Company's Turbistat, an instrument that provides continuous monitoring of turbidity in fluids. Baird Associates-Atomic Instrument Co., 33 University Rd, Cambridge 38, Mass.

Core drilling—Detailed description of its model 30 core drilling machine has been offered by Sprague & Henwood, Inc., in its new 8-page Bulletin #350. Major machine features described are four types of power units, its machined cast steel hoist, a three-speed transmission, its oil circulation system and optional features such as a two-cylinder water pump and a single-pole derrick that can be furnished for use on skid, trailer or truck mounted machines. Sprague & Henwood, Inc., Scranton 2, Pa.

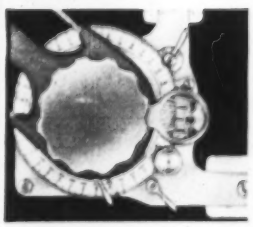
"And I Said I'd Never Use a Drafting Machine"



"That Was Before I Tried a Bruning Equipoise Drafter!"



Bruning Counterbalanced Drafters and Bruning Track Drafters provide fast, easy, accurate drafting on vertical boards and on extra-large drawings.



Bruning Equipoise Drafters are available with either the Civil Engineer protractor head, shown here, with its special azimuth scale, or the Standard protractor head.

Take a tip from an increasing number of draftsmen who, perhaps like yourself, were reluctant to try any drafting machine or had been disappointed in a conventional type drafter. These men now report: Bruning Equipoise Drafters cut drafting time over conventional equipment up to 40% on most jobs, up to 50% on some structural drawings — beat any other drafting machine they ever tried.

But prove it to yourself! See how fast you'll work with one precision instrument combining T-square, straightedge, triangle, protractor, and scales. Feel how the patented Equipoise mechanism eliminates any drift from gravity, literally makes the drafter "float" into place. Find how easy it is to rotate, turn, and lift this drafter — all with the left hand. At the same time, operate the Touch Control button with your left thumb to set the drafter automatically at any of 24 commonly used 15-degree increment angles. Don't overlook the special scale lock that makes it easy to change the scales, holds the scales rigid.

Your own test will convince you of the superiority of a Bruning Equipoise Drafter. Mail coupon today!

BRUNING

America's Largest Supplier of Engineering and Drafting Equipment.

CHARLES BRUNING COMPANY, INC., 4700 MONTROSE AVE., CHICAGO 41, ILL.

Charles Bruning Company, Inc., Dept. 114-M
4700 Montrose Ave., Chicago 41, Illinois

Please send me the free booklet on Bruning Drafting Machines.

Name _____ Title _____

Company _____

Address _____

City _____ County _____ State _____

THREE-GANG TAMPER does more work than three single tampers, yet requires only one man to operate. The Schramm 125 cfm Standard Pneumatractor moves right along with the work and furnishes full rated air at tool—enough to operate the three-gang tamper and another tamper.

CONSTRUCTION MEN AGREE:

There's no end to the jobs this tractor-compressor can do

What can you do with Pneumatractor? Drill rock or break out concrete. Load, unload and haul materials. Dig, grade, backfill and tamp. Plow snow or sweep concrete pavement. Cut brush and briars. Do mudjacking and under-sealing. Operate all kinds of compressed air tools—from chipping hammers and paint sprayers to paving breakers and post-hole diggers.

You've never seen any other machine do so many things so well. It's a complete, self-propelled, air compressing plant and tractor combined. It delivers 125 cfm at 100 pounds gauge pressure. Goes anywhere under its own power and converts, in an instant, right from the instrument panel.

What will you save with Pneumatractor? Plenty! The expense of a portable air compressor *and* a truck or individual tractor, plus its driver. The cost of maintaining two separate machines. The time and manpower involved in moving a portable compressor from one job to another. And, finally, idle time. Catalog 5540 gives full details. Write for your copy.

Your local Schramm Dealer is listed in the Yellow Pages of your telephone directory.

FORM PIN DRIVING is only one of the many jobs handled faster and cheaper by a self-propelled Schramm Pneumatractor. The compressor has capacity enough for more than one driver and needs no "stand-by" operator to watch it.

ROTARY BRUSH, mounted on Pneumatractor, is used to sweep concrete pavement so that surface can be inspected. Brush is hydraulically operated, so its rotation is entirely independent of the road speed of the Pneumatractor.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. West Chester, Pa.

Men and Jobs

Maryland's Dean Steinberg To Head Brazilian School

Samuel Sidney Steinberg, dean of the University of Maryland's College of Engineering since 1936, will become head of a government-operated aeronautical engineering school in Brazil next month.

During 38 years at Maryland, Steinberg has helped build the university into the position it holds today.

Steinberg calls his new school "the MIT of Brazil, with a distinguished faculty of professors from that country, North America, and other places." He will be furnished a home and a private airplane with pilot, in addition to his salary, reported to be tax-free.

Steinberg plans to fly from New York Dec. 27 to take his post at the Brazilian school—50 miles from Sao Paulo—which has grown to 500 students since its start in 1950.

General Chorpening Joins Firm

Maj. Gen. C. H. Chorpening (Ret.) one-time Assistant Chief of Engineers for Civil Works and recently on duty with U. S. forces in Japan has joined the firm of Herbert Voelcker and Associates, Houston, Tex., architects and engineers for public buildings and public works. The firm name has been changed to Herbert Voelcker, C. H. Chorpening and Associates, and General Chorpening will maintain an office in Centreville, Md., for part-time service with the firm.

Men and Jobs Briefs . . .

• **Associations**—The Dartmouth Society of Engineers elects as president, **Howard A. Schroedel,** vice president and director of the Turner Construction Co. of New York City.

The newly formed National Association of Distributors and Dealers of Structural Clay Products elects as president **Harry M. Spaulding** of the Spaulding Brick Co. of Boston, Mass.

• **Careers**—The director of the Memphis and Shelby County (Tenn.) Planning Commission, **Charles A. Phelan, Jr.,** resigns effective Dec. 31 . . . **Robert R. Baker** of the firm of Palmer & Baker, Inc., consulting engineers in Mobile, Ala. resigns for reasons of health.

Charles Crull, city engineer of Oceanside, Calif., resigns effective Oct. 31 to enter private practice in San Diego, Calif., as a registered civil engineer.

• **Business**—Victor W. Buhr Associates, engineers and architects of Salisbury, Md. announces that **William B. Miles, Jr.**, is joining the staff . . . **Rosaire J. Laporte**, and **Harold W. Penn** open offices as Consultants and structural engineers in Detroit, Mich. . . . **A. R. Todd** forms his own consulting engineering practice after resigning from the city of Wheeling, W. Va. The firm will be known as A. R. Todd Associates, Inc., Engineers in Wheeling, W. Va.

August S. Gehrels, who until recently was executive vice president of the Cuban Electric Co., is elected vice president of Ebasco International Corp. . . . The engineering firm of Tippetts-Abbett-McCarthy-Stratton of New York admits the following as general partners: **Frank Lilien, Leonard A. Lovell** and **Thomas J. Fratar.**

• **Retirements**—**Alfred C. Musson**, head of the Maintenance Division, Public Works Department, Brooklyn Navy Yard, after 37 years of service with the Navy. . . . **Bert Lund**, maintenance engineer for District X of the California State Division of Highways, after 28 years of service with the state.

Obituaries

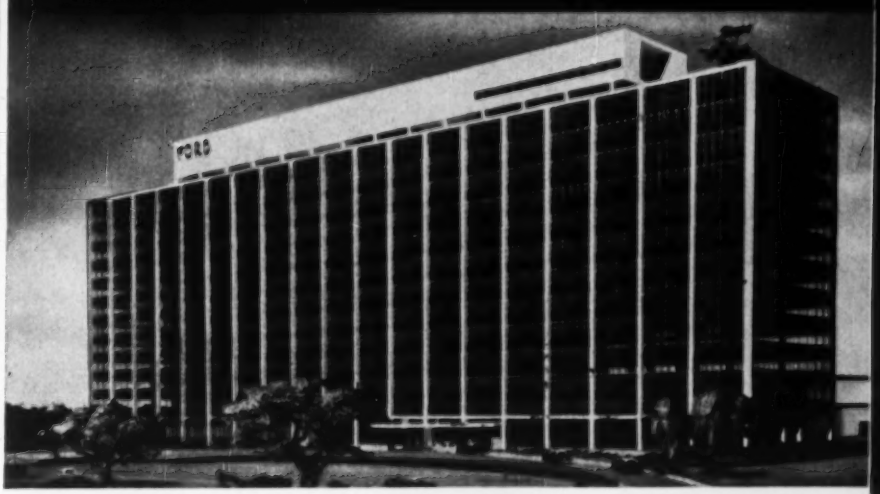
Joseph Salzman, 63, junior partner in the New York City firm of consulting engineers Strobel & Salzman, died Oct. 30 at Flushing, N. Y. Born in what is now a section of Czechoslovakia, Salzman came to the U.S. in 1920 after receiving, the same year, a civil engineering degree from the Technical University of Budapest (Hungary). He acquired U.S. citizenship in 1929.

Prior to forming his present partnership with Peter Strobel in 1944, Salzman was chief engineer for Skidmore, Owings & Merrill, New York architects and engineers. While serving with this firm, he participated in the World War II Manhattan Project, the atomic energy development at Oak Ridge, Tenn. During his career, he was also associated with Shreve, Lamb & Harmon Associates, architects; Hegeman-Harris Co., Inc., builders; and Lockwood Greene Engineers, Inc.; all of New York City.

Among his recent projects was the Albert Einstein College of Medicine, at Yeshiva University, New York. At the time of his death he was engaged in design work on a project to be built at Lexington, Ky., for International Business Machines Corp.

(Continued on page 63)

Q-FLOOR helps make Ford's new office building as modern as its cars



Ford Motor Company . . . . . Dearborn, Michigan
Skidmore, Owings and Merrill . . . . . Architects
Bryant & Detwiler Company . . . General Contractors
Weiskopf & Pickworth . . . . . Structural Engineers

Shown above is the Ford Motor Company's magnificent new administration building which occupies a 90-acre site in Dearborn. It provides nearly 950,000 square feet of floor space, approximately 500,000 square feet of which is Q-Floor and on which 3,000 employees are working in the comfort of the latest in modern lighting and air conditioning.

Architects Skidmore, Owings and Merrill carefully designed the building to prevent obsolescence due to changing conditions in the years to come. Interior partitions are movable to provide maximum flexibility in floor arrangements, and Robertson Q-Floor construction has been used to permit complete freedom of power and telephone outlet changes and additions at minimum cost. Only with this weight-saving, cellular steel structural floor can every exposed 6" square area be the potential location of a convenience outlet.

Robertson Q-Floor construction also saves time and money. Its weight-saving factor means lower cost of foundation and structural steel. It immediately becomes a safe storage and working platform for the benefit of all trades. And because no combustible forms and falsework are required for the concrete fill, there has never been a construction fire on a Q-Floor job.

With all these features, it is easy to see why Q-Floor will help keep this fine new building as modern as the Ford of tomorrow.

Robertson

Q-Floor

a product of **H. H. Robertson Company**

World Wide Building Service

2420 Farmers Bank Building • Pittsburgh 22, Pennsylvania

Please send a free copy of your "Q-Floor" catalog.

Name _____

Address _____

Here Now! NEW CHEVROLET FIRST with the MOST

They're out to save you hours and dollars on any hauling job . . . and they've got big new power plus the modern features that make it a sure thing! They put you way ahead with time- and work-saving advantages you won't find in any other truck today!

Year after year—first with the most modern features! And again, for 1957, Chevrolet brings you the industry's most advanced truck features—new developments that have already been proved in a history-making preannouncement test run! (See below.)

For '57 there's bold new styling—rugged good looks to match Chevy's remarkable stamina and dependability. There's new

---

Alcan Highway Test Run Proves Chevrolet Ruggedness!

In an AAA-certified endurance run, 6 new Task-Force trucks roared up the 1,520-mile Alcan Highway (normally a 72-hour run) in less than 45 hours! In dramatic fashion, new Chevy trucks conquered one of the world's most challenging roads and proved their greatness!

A

TASK·FORCE 57 TRUCKS!

modern features

fleet-action power in Chevy's outstanding new engine line-up—with the 195-h.p. Loadmaster V8 standard in all 9000 and 10000 series trucks; and the sensational new 283-cu.-in. Taskmaster V8 (160 h.p.) standard in 5000, 7000 and 8000 series models. All told: *five* high-efficiency V8's and *three* economy leader 6's in the truck line alone!

Many models are equipped with bigger, brawnier rear axles. And there's a load of heavy-duty options for '57 — including Chevy's revolutionary 6-speed Powermatic transmission, designed especially for heavy-load, high-mileage hauling.

Your Chevy dealer has all the details. When you see him, be sure to check the new cab features, too. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

The "Big Wheel" in trucks!

B

C

A. Cameo Carrier covered entire distance without stopping engine; averaged 18.17 miles per gallon!

B. New Super Taskmaster 283 V8 stole the power show, flattening an obstacle course of mud, gravel and grades!

C. 1,520 miles without shifting gears! Powermatic equipped heavyweight went all the way in a single forward-speed range!

No costly maintenance problem here

For year-in, year-out durability and minimum maintenance, Olympic Portland Cement Co. selected Johns-Manville Corrugated Transite for its Bellingham, Washington, plant. Transite Erector: The E. J. Bartells Company.

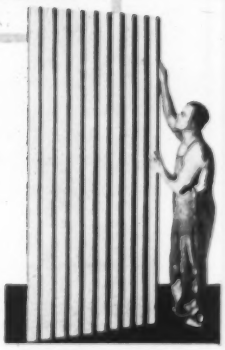
build with Johns-Manville Corrugated Asbestos Transite

For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing . . . permit fast, economical construction of industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it . . . it's fireproof and rotproof. Corrugated Transite is also used increasingly for interiors. The streamlined corrugations and attractive shadow lines offer interesting design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, long-lasting, trouble-free structure regardless of size or purpose. For complete details, write Johns-Manville, Box 158, Dept. EN, New York 16, New York. In Canada write 565 Lakeshore Road East, Port Credit, Ontario.



- Large sheets go up quickly
- Easy to fasten to steel
- Easy to nail to wood
- Easy to saw
- Easy to drill

See "MEET THE PRESS" Sundays on TV, sponsored by Johns-Manville. Consult your newspaper for time and station.

JOHNS MANVILLE JM PRODUCTS

Johns-Manville

. . . Obituaries

Adolph Wehner, 68, retired engineer for the City of San Francisco, died Oct. 26 in Fresno, Calif. He retired at 65 after 36 years with the San Francisco Public Utilities Commission's Bureau of Engineering. Mr. Wehner played an active role in developing San Francisco's water supply from the Sierras (the Hetch Hetchy project) and in preparation of the tideland site for San Francisco International Airport.

J. Stanley Donahue, 65, president of the Lally Column Co., Cambridge, Mass., died Oct. 30 at White Sulphur Springs, Va. Mr. Donahue was a past president of Metal Fabricators and had been active in the American Institute of Steel Construction, the Massachusetts Building Congress and the Master Builders Association.

James A. Broadbent, 61, an engineer with the M. W. Kellogg Co., of New York, died Oct. 30 in South Africa. The firm is constructing an oil refinery there. A native of Scotland, Mr. Broadbent studied mining engineering at Glasgow University. He had been with Kellogg for 35 years and also had engaged in construction work during the 1930's for Hercules Powder Corp. and the Lummus Co. He became a citizen of the U.S. in 1928.

Farrand Northrop Benedict, 76, died Nov. 3 at Parsippany, N. J. after a short illness. Mr. Benedict was for 46 years vice president and chief engineer of the Thomas Crimmins Contracting Co., of New York City. He was a graduate of the Columbia University School of Engineering.

Color Film Stimulates Interest In Engineering as a Profession

The type of training necessary for the engineering profession, and the engineer's role in planning the world of tomorrow, are subjects of a nontechnical, color movie by the College of Engineering of Ohio State University.

The 20-min sound film is designed to serve as a guide to youngsters and their parents, in evaluating the educational requirements and practical-applications of engineering training. It attempts to answer four questions: What is an engineer? Why is he needed? What does he need to know? How does he become an engineer?

The film centers around the world of a young boy and is called "Engineering for Eddie". It is available on a free-loan basis or purchase from the Department of Photography, Motion Picture Division, Ohio State University, Columbus 10, Ohio.

WIRE ROPE TALKS

SUBJECT:

STORING WIRE ROPE OUTDOORS

Practical hints on the use and care of wire rope by Robert M. Kilian, Chief Engineer of Leschen Wire Rope Division, H. K. Porter Company, Inc.

QUESTION:

What is the best method of storing wire rope outdoors?

ANSWER:

If you think of wire rope as a machine of many parts built to close tolerances, you quickly understand why it should be protected from outside exposure, particularly from dampness or humidity. Extended exposure under severe conditions will impair wire rope to the point of substantially reducing its effectiveness. After idleness and lack of care it may be of little use.

For example, rust tends to bind wires together so they are not free to move back and forth. Then they fail to adjust themselves when lifting or pulling a load. They do not move properly in operation around sheaves.

Lubrication and Cleaning

The outer layer of new wire rope to be stored on its shipping reel should be covered with a heavy protective lubricant. A generous application will tend to protect the entire length. "LePro" Wire Rope Protector, a Leschen product, is especially formulated for this purpose. You apply it cold, and it goes on quickly with a brush or by pouring slowly from a can.

Wire rope that has been used should be cleaned thoroughly with a wire brush, compressed air, or superheated steam. Then lubricate it with a penetrating lubricant that will coat all strand wires, internally as well as externally. Next coat the rope with "LePro" to seal in the other lubricant and repel penetration of moisture and fumes. Finally, wind the used rope on a reel.

Following lubrication with "LePro" it is advisable to cover the rope on the reel with waterproof or tar paper. Seal the paper at the flange with "LePro."

Taking proper care of high-quality products like HERCULES Red-Strand wire rope is as important as selecting them in the beginning. You are money ahead on both counts.

Storing and Re-Use

Select a storage area that is clean and dry, and as well protected from the weather as possible. Avoid nearby acid fumes or other corrosive agents. They can cause embrittlement of the surface of the wires. Place reels on wood or metal supports.

When rope is returned to service, excess lubricant can be wiped off as the equipment is run slowly. Lubricants may pick up some dirt later, but this will cause far less damage than would the leaching effect resulting from the use of a solvent for cleaning.

High quality and performance built into Leschen wire rope is well worth preserving by proper storage methods. To obtain this quality in the first place remember to specify the rope with a RED STRAND—the symbol of highest quality wire rope for seventy-five years.

A Leschen district warehouse or distributor is nearby. See your Leschen man for other rope-saving suggestions—and for HERCULES Red-Strand Wire Rope.

Reprints of this "Wire Rope Talks" are available on request

LESCHEN HERCULES Red-Strand® WIRE ROPE

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri
HKP

POWER
BY
HERCULES...!

BAKER Industrial Trucks rely on . . . POWER BY HERCULES. These rugged trucks demand a compact, heavy-duty power plant. That's why Hercules Gasoline and Diesel Engines were selected as standard in Baker equipment.

The wide selection of Hercules Engines—over 90 models from 3 to 500 H.P.— provides a proper size of engine to meet your power requirements.

For power "tailored" to your needs, specify . . . POWER BY HERCULES.

HERCULES MOTORS CORP. • CANTON, OHIO

International

Largest Lagoon

Sewage lagoon recommended for city of 90,000

If it carries out the recommendations of its consultants, Regina, Saskatchewan, will have the largest sewage lagoon installation to date, and will be the largest city served by the process.

Confronted with the need to expand an overloaded trickling-filter plant, Regina will find it most economical to build eight sewage lagoons over a 2,400-acre site, say D. R. Stanley and Associates, Edmonton, and James MacLaren Associates, Toronto. Otherwise, Regina will have to convert the existing plant to an activated sludge operation.

The main difficulty with expanding the existing trickling-filter plant is an unusually strong sewage, 422 ppm of suspended solids, 570 ppm of BOD and 87 ppm of grease. Better than 90% reduction in solids and BOD would be achieved by the lagoons, state the consultants.

Regina is a prairie city of 90,000 population, expected to reach 130,000 by 1975. It has the windswept climate of many of the smaller towns and villages in Saskatchewan, the Dakotas, and Montana wher sewage lagoons are growing ever more popular. At this time, the consultants state the largest town in North America served by lagoons has a population of 11,000.

Regina's pending involvement with sewage lagoons is not to be confused with its present problem with sludge lagoon odors (ENR Nov. 1, p. 76).

Mackinac Bridge Studied For European Application

The Straits of Mackinac bridge, the world's longest single suspension span when it is completed in November, 1957, may become the model for a bridge connecting Sweden and Denmark.

Karl-Gustaf Hjort, director of Sweden's royal board of roads and waterways, recently visited the bridge which will span the straits between Michigan's upper and lower peninsulas.

He studied the similarity of the problem Swedish and Danish engineers may have in bridging the Oresund Strait between the North and Baltic seas.

He said the strait in Europe varies from four to seven miles at the points where it may eventually be bridged.

"We are developing long range pro-

(Continued on page 69)

ALL OF IT STARTED
WHEN ICHABOD MET BEN

ICHABOD WASHBURN

Ichabod, Ichabod, how did you ken
The need for wire when you met Ben!
How did you know you'd not lose your shirts;
That ladies of fashion would hoop their skirts!

BENJAMIN GODDARD

Ichabod, Benjamin Goddard and you
Together made some products new.
How did you know that when sales took a drop
Washburn & Goddard would still be on top!

Ichabod. Benjamin. You made some dough
And finally merged with a worthy foe.
A. S. and W. now it became,
With products and sales, and world-wide fame.

Times have changed—wire uses, too,
But venerable A. S. and W.
Still remains foremost and best
In wire and wire products from Worcester, west.

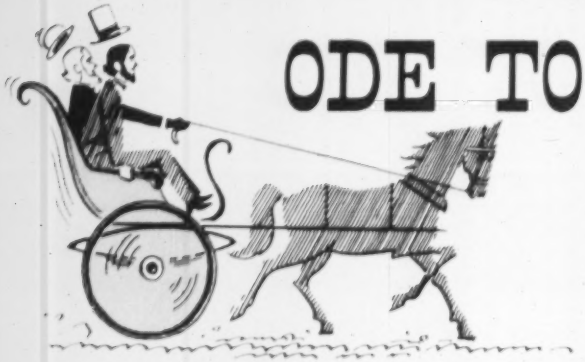
AMERICAN STEEL AND WIRE DIVISION
1831-1956
125
YEARS
PEOPLE · PROGRESS · PRODUCTS
UNITED STATES STEEL CORPORATION

READER: *If you would like information on steel reinforcement for concrete, you might find some on the next page. . . .*

AMERICAN STEEL & WIRE DIVISION

UNITED STATES STEEL

ODE TO A ROAD...AND

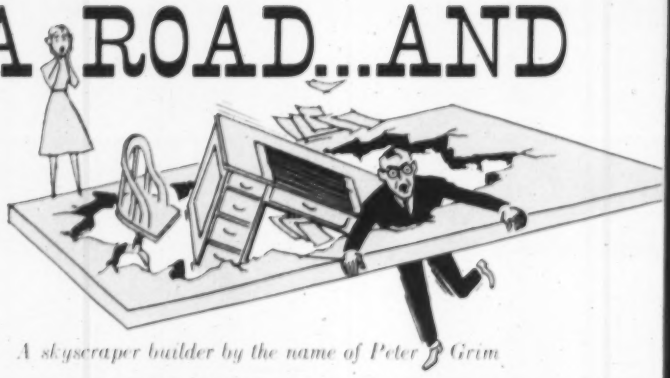


When Ichabod and Ben used to ride through towns

They bounced and they jounced and they wore big frowns.

Today, they'd be happy, and free of all ire

On roads made of concrete, reinforced with wire.



A skyscraper builder by the name of Peter B. Grim

Forgot wire fabric and learned to his chagrin

That there's not a building tenant who doesn't deplore

An office that's built with a disappearing floor.

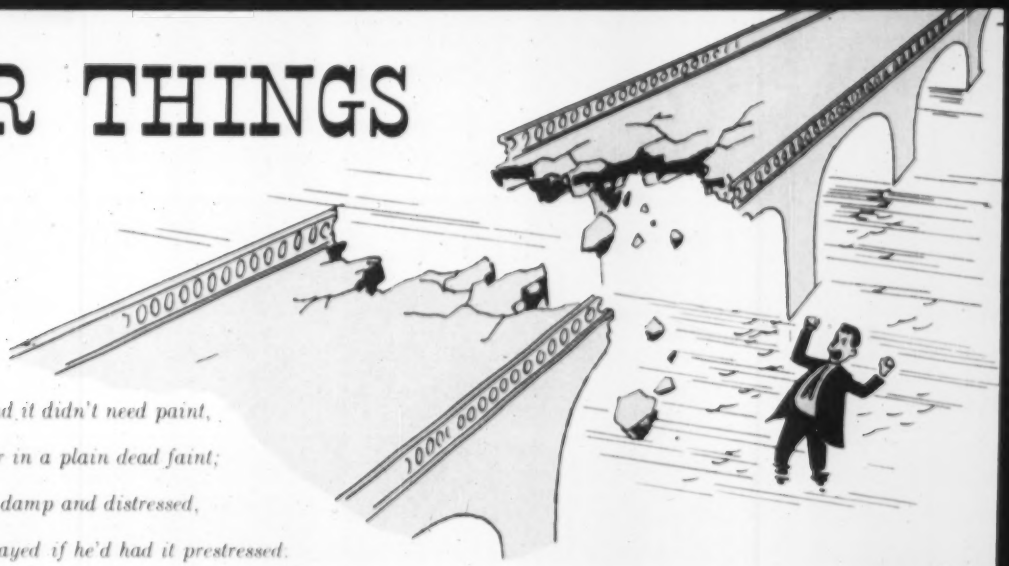
Quality American Welded Wire Fabric reinforcement controls cracking, and the longer reinforced concrete slabs provide a smoother riding pavement. Reinforced concrete pavements are 30% stronger than plain concrete pavements of equal thickness. Reinforced concrete pavements therefore last longer. You will find American Welded Wire Fabric adding strength to superhighways in Pennsylvania, Ohio, Indiana, and the City of Detroit. It is used with excellent results in asphaltic as well as Portland cement concrete. It comes in any size and style you need.

You need the extra strength of American Welded Wire Fabric reinforcement in any concrete floor. In beam and slab floors, like those in the Socony-Mobil Building shown above, and in pan and joint floors, American Welded Wire Fabric can be rolled into place quickly and easily . . . comes in any size or style you need.

USS AMERICAN
WELDED WIRE
FABRIC

USS

OTHER THINGS



There once was a bridge and it didn't need paint,
But collapsed in the river in a plain dead faint;
And so did the builder, all damp and distressed,
His bridge would have stayed if he'd had it prestressed.

Prestressed concrete now is being used in building floors, roofs, and beams, as well as in bridges. And in the Lincoln Tunnel Retaining Wall, shown at right, prestressed concrete panels form the wall. These panels were pretensioned with American High Strength Stress-Relieved Strand. American Steel & Wire also manufactures Super-Tens Stress-Relieved Wire for prestressing systems that use wire. American Steel & Wire was the first to manufacture a high strength strand for pretensioned, prestressed concrete. We make a complete line of sizes and types in both wire and strand.

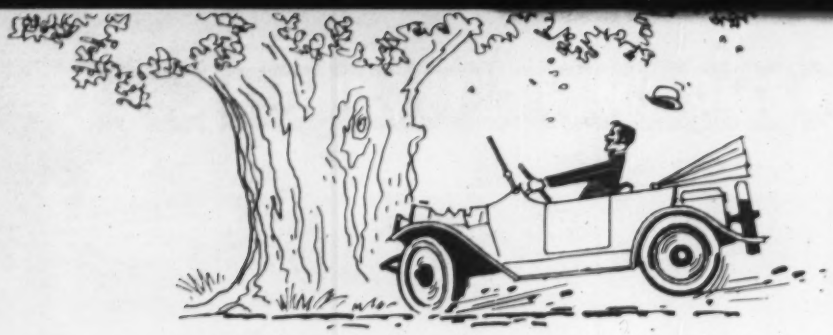
OUR POINT IS THIS, *if you can stand some more*
When it comes to wire, we're a general store. For roads, for bridges, no matter what,
Of wire and wire products we've got a lot — So send the coupon without delay;
Just turn this page, and send it today.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL · GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS · UNITED STATES STEEL EXPORT COMPANY

USS AMERICAN **Super-Tens** Stress-Relieved WIRE
and
AMERICAN HIGH STRENGTH STRESS-RELIEVED STRAND

Accidents are no joke! Like you
we'd like to stop them all.
Failing that, here's help for you —
Multisafty Cable Guard



American Multisafty Cable Highway Guard is made from resilient steel cables, mounted on resilient spring-steel offset brackets. The combination gives vehicles two-way protection: it restrains a vehicle from plummeting off the berm, and cushions the shock of impact between vehicle and guard. It is easy to install, easy to maintain, and lasts a long time. It is the only guard rail that can be designed to provide definite miles-per-hour protection to the automobile driver. American Steel & Wire beam-type guard is also available for highway and parking lot installations.

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- ☐ General Catalog on Welded Wire Fabric
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UNITED STATES STEEL

gramming for all our highways and a bridge between Denmark and Sweden is being considered," said Hjort.

Hjort was particularly impressed with the foundation structure of the Michigan bridge. He said the Oresund project probably would require a similar foundation system.

Hjort came to the United States as a member of a six-man delegation of Swedish engineers to attend a meeting of the International Road Federation. They also investigated the design and operation of the New Jersey and Pennsylvania turnpikes and Hjort studied Michigan's system of roadways.

U. S. Firms to Build Reactor For Venezuelan Research

Two U. S. firms have been selected to design, manufacture, and furnish consulting engineering services for Venezuela's first atomic reactor—largely for medical research.

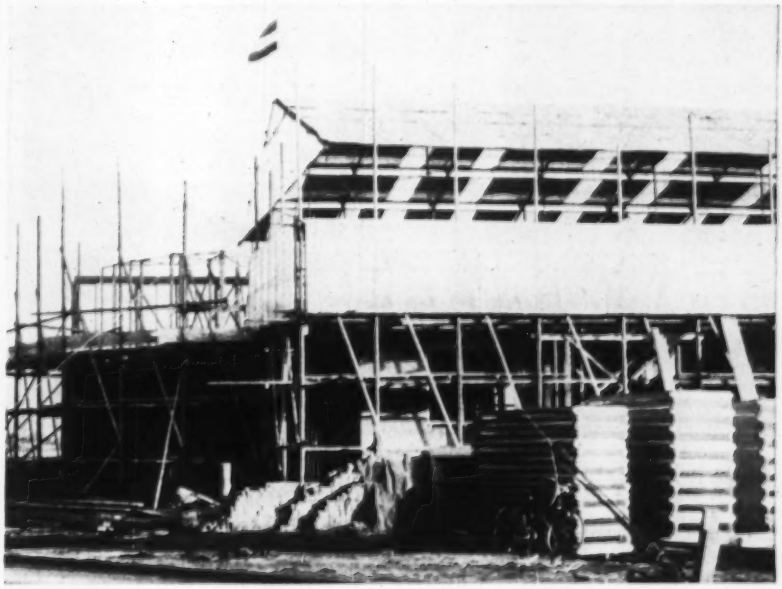
Humberto Fernandez-Moran, director of IVNIC, the Venezuelan biophysics and nuclear physics research center, said in a recent announcement that the General Electric Co. will design and manufacture a research reactor rated at 3,000 kw, and General Nuclear Engineering Corp., of Dunedin, Fla., will act as consulting engineers for experimental requirements and design of housing for the reactor.

Argentina Plans Port Work

A new port to bring agricultural produce from a large section of the Province of Misiones to market, will be built on the left bank of the Alto Parana River at a town known as Puerto Viejo.

Government plans call for four piers to permit direct loading from trucks. The piers will be built with varying levels connected by ramps to permit loading during the widely fluctuating stages of the river.

(*International continued on page 70*)



Metal Umbrella Shields Construction

A Dutch building contractor has found a way to beat the weather. He erects an aluminum umbrella over his job and raises it with the building. Plastic sides complete the enclosure, while infra-red ray heaters warm the interior when necessary.

N. V. Haagsche Bouwmaatschappij, The Hague, on a current project is maintaining a 230x45-ft aluminum cover 10 ft above construction level. Openings in the light-gage corrugated aluminum sheets that form the movable gable roof are glazed with transparent plastic to admit light. The metal sheets are supported on steelpipe rafters, which are tied to form a truss. The whole umbrella is carried on steel-pipe scaffolding and is guyed to deadmen at grade along the edges and ends, to resist wind pressure.

The plastic sheets forming the walls of the enclosure are transparent. They rise with the umbrella.

Experience with this enclosure last winter proved that building operations can proceed in spite of rain and snow.

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Use MORTITE in *any* mortar, *anywhere*, under *any* conditions. It produces a smooth "buttery" mix with a minimum of water.

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these jobs were done at a lower cost with the

SAUERMAN METHOD

Silt Removal by Slackline Cableway keeps channel clear for irrigation project. Bucket digs, then conveys spoil to downstream side of dam. (*Sauerman News 146*).

Digging Gravel for a plant supplying aggregate for 82 miles of turnpike, this 5-yd. DragScraper often operates around the clock. It has excavated over a million tons. (*Sauerman News 145*).

Reclaiming Material to hopper from all sections of a 500-ft. warehouse, the estimated operating cost of this DragScraper Machine is 2.1 cents per ton. (*Sauerman News 145*).

•

You'll find a complete description of the Sauerman Method in Catalog A, DragScrapers; Catalog C, Slackline Cableways; and Catalog E, Bulk Storage by Scraper.

SAUERMAN BROS., Inc. 632 S. 28th STREET BELLWOOD, ILLINOIS

Iraq Irrigation Project Gets $22.4-Million Grant

The Iraq Development Board last week allocated the U. S. equivalent of $22.4 million for the construction of the second and third parts of the Greater Mussaiyab irrigation project. The first part was completed recently at a cost of $11.2 million.

The Greater Mussaiyab project is designed to irrigate about 216,529 acres of government-owned land between the Tigris and Euphrates rivers in the central part of the country.

The total land area will be distributed among small-holding farmers. Each family will receive a total of 41 acres free and a government grant of about $260 to help start the new farms.

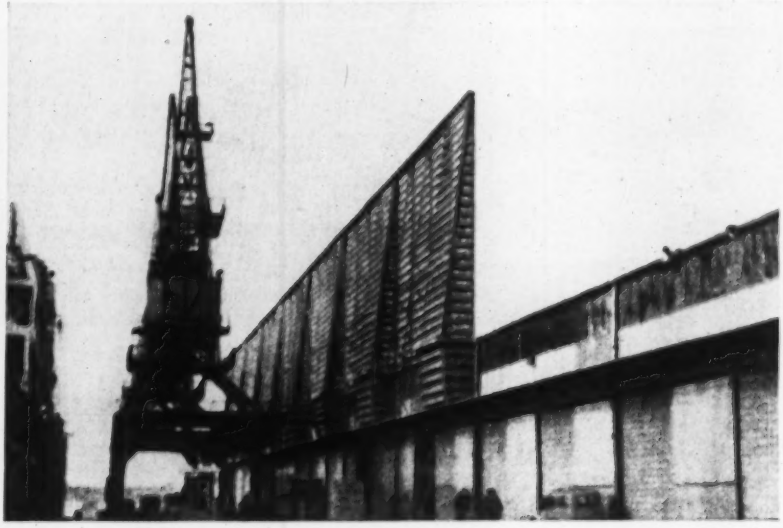
The Mussaiyab project is designed so that farmers can cultivate their land intensively year round rather than having to rotate their crops as has been the custom in this area for centuries.

Atomic Energy Reactor Scheduled For India

The Foundation Company of Canada has been awarded a contract by the Atomic Energy of Canada, Ltd., to erect the first atomic energy reactor to be built in India.

Financed jointly by India and Canada, the reactor, for research and experimental work, will be built about seven miles from Bombay.

Scheduled for completion in 1958, work has already begun on site clearance for the plant. The reactor is being designed by the Shawinigan Engineering Co., Ltd., of Montreal.



Slotted Windbreak Protects Ships at Piers

Shipping in several French harbors is seriously inconvenienced and sometimes damaged by the high winds which periodically blow from the south. As a consequence various types of windbreaks have been tried to protect ships as they lie at the piers, and to shield the unloading cranes from the overturning forces. At Le Havre, following the capsizing of the old German passenger liner, "Europa" as it was being converted into the present "Liberte", a reinforced concrete wall, with a sloping face (suggestive of a dam spillway) was built alongside a slip where ships tie up (ENR Aug. 19, 1948, p. 98). Now, at Marseilles, a completely different, much less expensive type of windbreak has been installed along the roof of a pier shed, and is claimed to be equally effective.

The particular characteristic of the Marseilles windbreak is that it is slotted, permitting some of the wind to pass through, but at reduced velocity; the wind striking the windward face at 70 mph is said to have only a 15-mph velocity on the leeward side. The structure is built up of steel plates 15 in. wide and 18 ft long set horizontally with 36-in. openings between. The supporting framework, anchored to the roof of the pier shed, is so arranged as to make every alternate 18-ft length of wall into a buttress, the better to resist overturning. The total length of the windbreak is 380 ft and it is 65 ft high.

Apartment Building, Pittsburgh, Pa.

401 Shady Avenue

Contractor: Larson Construction Company,
300 Mt. Lebanon Blvd., Pittsburgh 34, Pa.

Structural steel and standard steel joists by American Bridge

AMBRIDGE STEEL JOISTS

save time

and money

for everyone!

The handsome new apartment building shown in the rendering above is another good example of steel-frame construction in combination with AmBridge Standard Steel Joists for all floor and roof supports.

Fabricated and erected by American Bridge for this strong, fireproof structure were 710 tons of structural steel and 809 tons of AmBridge Standard Steel Joists with accessories.

USS AmBridge Standard Steel Joists provide rigid, lightweight and economical construction suitable for any type of floor, roof and ceiling. The underslung and open-web design provides for maximum headroom and allows passage of pipes, ducts and conduits in any direction.

In floor construction, the ease and simplicity of handling this new-design steel joist reduce installation time to a minimum and permit other trades to begin work promptly. And for roof construction, it cuts the time required to put your structure under cover.

Fabricated and assembled on a modern production line basis to assure you a better product in faster time, USS Ambridge Steel Joists will enable you to build an economical structure without interruption of your schedule. For detailed information about the time- and money-saving advantages of these superior products on your next job, get in touch with our nearest office.

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AMBRIDGE STEEL JOISTS

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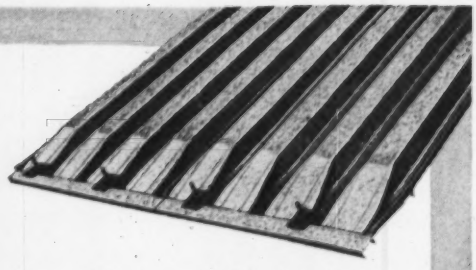
A NEW

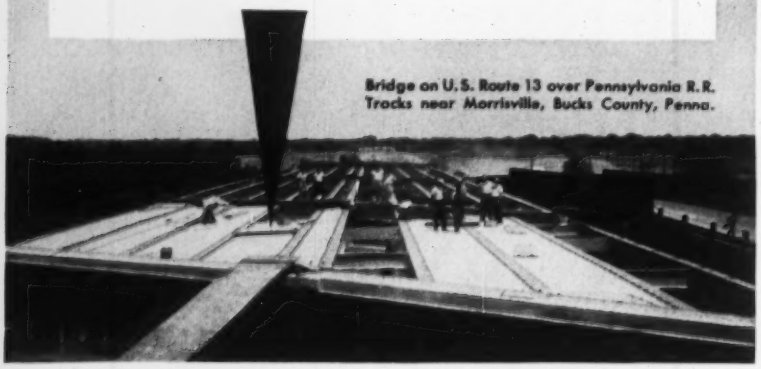


USF

PRODUCT... *Leave-In-Place*

STEEL FORMS

FOR CONCRETE BRIDGE FLOORS



Bridge on U.S. Route 13 over Pennsylvania R.R. Tracks near Morrisville, Bucks County, Penna.

Investigate this new USF Leave-In-Place steel form for concrete bridge floors. Made of galvanized steel, trapezoidally corrugated in laying widths approximating 24" for clamping direct to structural flanges, it particularly adapts itself to structures involving high or hazardous conditions. Permits all form work from top-side and eliminates shoring and stripping of old-fashioned wood forms. Once in, you leave-in-place. Low cost—to be sure!

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Books

Miscellaneous Notes

• **Asphalt**—Out of the first Western Conference on Asphalt in Hydraulics, held last year at the University of Utah, comes a booklet for engineers and contractors containing research information and practical applications of asphalt in hydraulic installations.

The 247-page bulletin can be obtained from the College of Engineering Department of Civil Engineering, University of Utah, Salt Lake City, Utah. Price is $2.75.

• **Waste water**—A 90-page report covering the second year of studies of reclamation and utilization of waste waters for the State of California has been released. The studies were carried out by the Sanitary Engineering Research Laboratory of the University of Southern California for the State Water Pollution Board. Copies of the report, Publication 15, may be had for $1.45 by writing the State Printing Division, Documents Section, Sacramento 14, Calif.

• **ASTM standards**—This compilation of ASTM Standards includes the latest editions of standard and tentative specifications, test methods, and definitions of terms pertaining to mineral aggregates, concrete and selected highway materials. The publication is sponsored by Committee C-9 on Concrete and Concrete Aggregates and Committee D-4 on Road and Paving Materials, and includes all standards for concrete and concrete aggregates prepared by Committee C-9, but only those for selected nonbituminous highway materials or those involving aggregate gradings or tests developed by Committee D-4. It also contains pertinent specifications for cement under the jurisdiction of Committee C-1 on Cement.

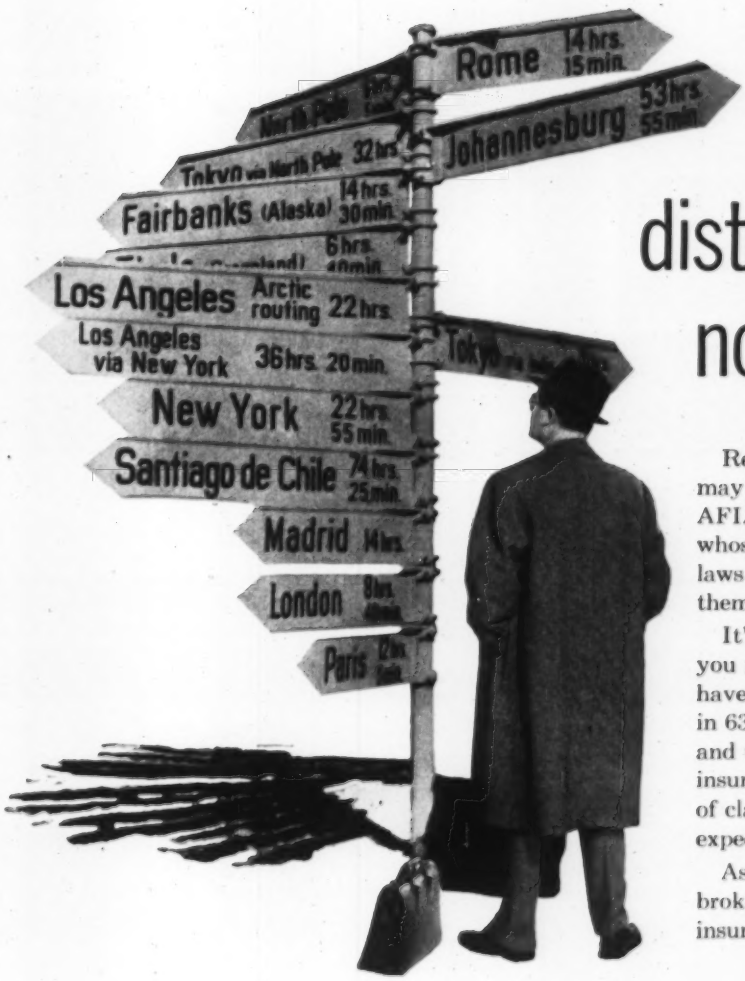
This 360-page book contains 98 standards in their latest forms. Copies may be obtained from ASTM Headquarters, 1916 Race St. Philadelphia 3, Pa. at $3.75 each.

New Engineering Books

SURVEYING INSTRUMENTS AND METHODS—by Philip Kissam. 482 pp. Second Edition. McGraw-Hill Book Co., 330 West 42nd St., New York 36. $5.75.

THE THEORY OF SOUND—Volume I—by Lord Rayleigh. 480 pp. Dover Publications, Inc., 920 Broadway, New York 10. $1.95.

THE THEORY OF SOUND—Volume II—by Lord Rayleigh. 504 pp. Dover Publications, Inc., 920 Broadway, New York 10. $1.95.


Rome 14 hrs. 15 min.
Johannesburg 53 hrs. 55 min.
Tokyo via North Pole 32 hrs.
Fairbanks (Alaska) 14 hrs. 30 min.
6 hrs.
Los Angeles Arctic routing 22 hrs.
Los Angeles via New York 36 hrs. 20 min.
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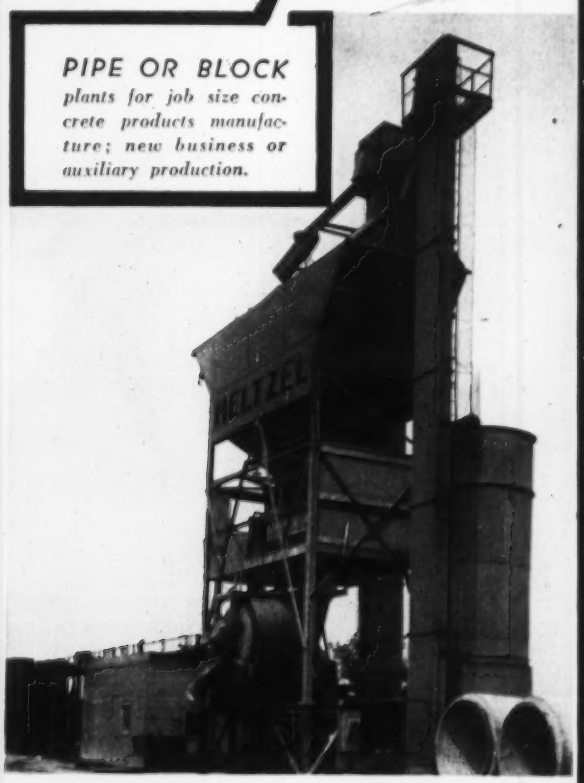
READY-MIX *plants ideal for decentralization —spotting at new housing developments, etc.*

PIPE OR BLOCK *plants for job size concrete products manufacture; new business or auxiliary production.*



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PAVING plants — both aggregate and cement —that have proved themselves to be the finest yet engineered. True portability, plus unmatched speed and accuracy.

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Don't buy any plant until you have talked with the owner of one of these new Batchmasters, for true portability is but one of many new features that make the Heltzel 1956 Line the fastest, most accurate and flexible plants on the market. And remember Batchmasters cost no more—so why not operate with the finest.

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THE HELTZEL STEEL FORM AND IRON COMPANY
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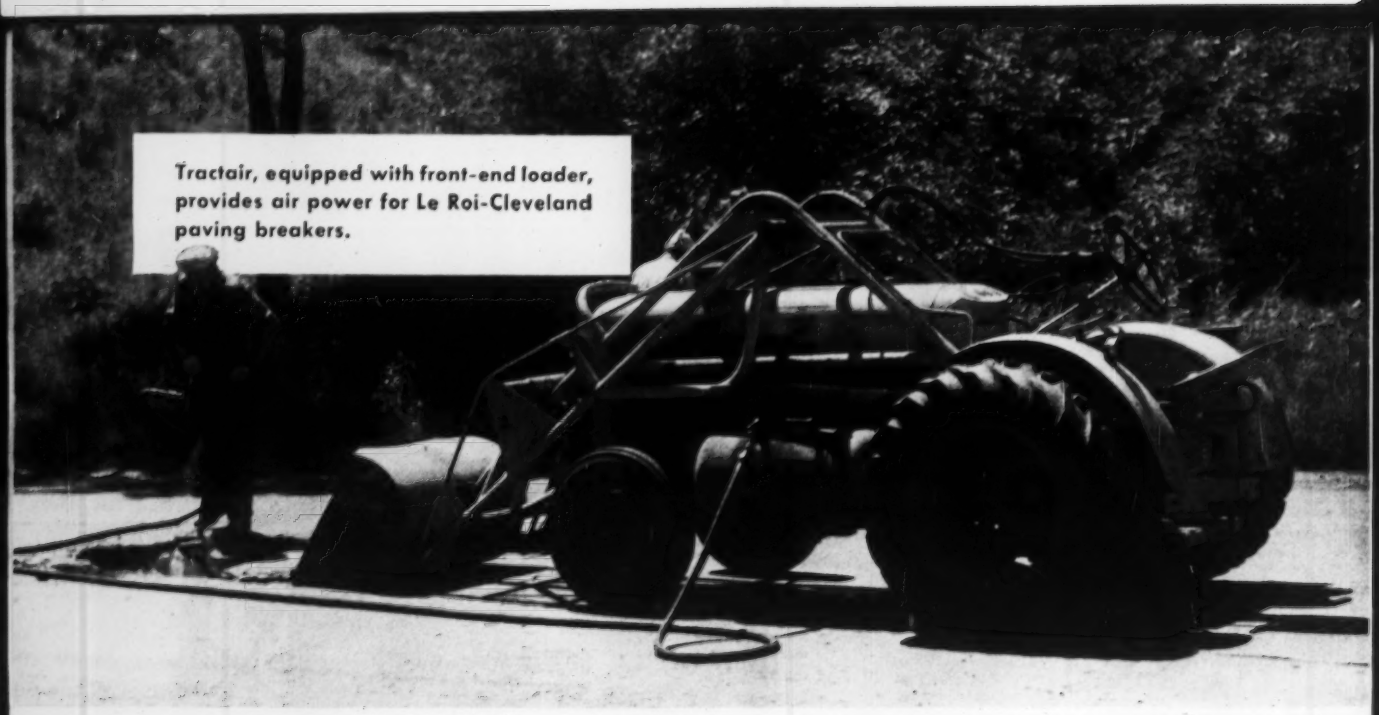
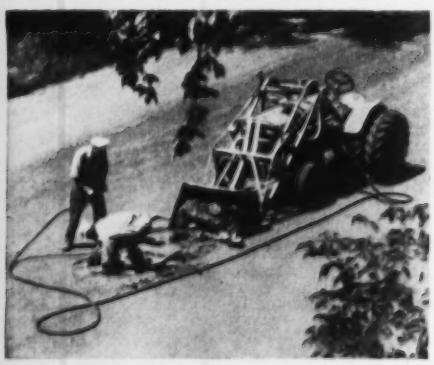


Tractair, equipped with front-end loader, provides air power for Le Roi-Cleveland paving breakers.

Combination Tractor-Compressor Unit Works 8-hour Day, All Year Long

One Le Roi Tractair (combination tractor-compressor unit) can do the work of several specialized machines — plus supplying 125-cfm air power for a wide variety of air tools. Because Tractair is a combination 42-hp wheel tractor and a dependable air compressor, here's what can happen on your jobs — in one day — using just one of the many Tractair attachments available:



Broken concrete is loaded out by the Tractair with front-end loader attachment.

Backfill blade easily replaces Tractair front-end loader bucket for light-grading work.

7:00 A. M. Tractair, equipped with a front-end loader, arrives at the job site. Le Roi-Cleveland pavement breaker powered by the Tractair's 125-cfm air compressor breaks concrete.

7:56 A. M. With the front-end loader attachment, the Tractair loads out broken concrete from the trench site.

8:39 A. M. Le Roi-Cleveland clay spades, powered by the Tractair compressor, trim up the excavation for pipe laying.

9:58 A. M. The operator drives the Tractair to another job to provide power for pumping out a water-filled trench.

11:00 A. M. Returning to the first job, the Tractair fills in the trench with its front-end loader.

11:30 A. M. The Tractair compressor provides air power for Le Roi-Cleveland tampers to compact the trench fill.

1:00 P. M. Using the front-end loader attachment, the Tractair loads out excess dirt into a truck.

1:20 P. M. The self-propelled Tractair proceeds to another job site and provides air power for rock drilling.

2:42 P. M. After rock has been blasted out, the Tractair 125-cfm air compressor provides air power for Le Roi-Cleveland breakers to trim up the hole.

4:05 P. M. With the crane boom on the front-end loader, the Tractair lifts and lowers heavy pipe into the trench.

4:45 P. M. The Tractair loads out debris to leave the work area clean and safe.

Yes, the Le Roi Tractair can give you performance like this around the clock — on all of your jobs. Applications are unlimited with Le Roi Tractair attachments. For example, the front-end loader attachment has many quick-change accessories — utility platform, fork lift, straight backfill blade, combination bucket and crane boom, crane lift, and several snow removal tools. Other attachments for the Le Roi Tractair are the backhoe, earth auger, rotary sweeper, backfill blade, snow blades, and many more.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products.

47-49

Local Custom and Usage May Be Part of Contract

Contracts are governed by the law of the state in which performed even though executed in another state. The custom and usage of the state of performance may be used to explain the intent of a contract but not to vary its terms.

The point is illustrated by a federal case that arose in Texas over the method of measuring, for the purposes of payment, the quantity of crushed rock used on a job.

In that case Edward E. Morgan Co., Inc. and Jones & Gillis, Inc., prime contractors, entered into a contract with the United States Government for construction of a runway, taxiway and parking lot extensions at an air base located in Texas. The work was to be performed on a unit price basis. Included in the work was the installation of a crushed stone base course requiring an estimated 30,500 cubic yards of crushed stone.

The prime contract contained the following provision: "The unit of measurement for base course shall be the cubic yard, measured in place and computed by the average end-area method, for the quantity of completed and accepted base course as determined by the contracting officer."

W. O. Pelphrey, a subcontractor, submitted an offer by letter, whereby he agreed to furnish in accordance with the specifications all equipment, tools, labor, and incidentals necessary to excavate and crush a minimum of 40,000 cubic yards of Edwards Limestone.

The offer was accepted by the prime contractors. The letter of acceptance contained the following notation: "You will also be governed by the same regulations as to wages, etc., that we are under the terms of our contract."

Although not mentioned in either the letter of offer by the subcontractor or in the letter of acceptance by the prime contractors, some of the rock crushed by the subcontractor was used for extra work. The prime contractors employed another subcontractor to haul the rock crushed by Pelphrey to the site in dump trucks. The amount of rock so hauled amounted to 47,980 cubic yards. The hauling subcontractor was paid on this basis.

The work of the subcontractor was completed on July 11, 1953. On July 24, 1953, he billed the prime contractors with mining and crushing 47,980 cubic yards. The army engineers estimated that the total amount of crushed stone in place, which was the basis of payment to the prime contractor, amounted to 33,602 cubic yards. The prime contractors contended that the subcontractor who had furnished the crushed stone was entitled to payment for only that amount. Payment was tendered on this basis. Subsequently, the prime contractors offered payment based on 40,000 cubic yards of crushed stone, the minimum quantity specified in the letter of agreement. The tender was refused by the subcontractor who brought an action to recover the balance he claimed was due. The subcontractor obtained a judgment at the trial and the judgment was affirmed on appeal.[1]

The contract in question was entered into in Mississippi but was to be performed in Texas. The court held that where a contract is made in one state and is to be performed wholly in another state, the law of the state where the contract is to be performed governs.

The court held that the contract provision to the effect that the work would be performed in accordance with the specifications, related solely to the manner of the performance of the work, and not the manner of measuring the quantity of rock delivered by the subcontractor, nor the basis for computing the amount to be paid him, and did not incorporate into the subcontract the prime contract provisions for measurement of the crushed rock.

The prime contractors at the trial objected to the admission of testimony to show the usage or custom of measuring rock. The court held that while custom or usage will not be permitted to vary the terms of a written contract, in the instant case, where neither the letter of proposal nor the letter of acceptance specifically provided that the quantity of crushed stone should be determined by measurement in place by the United States engineers, it was proper to permit the subcontractor to offer evidence to show that in Texas it was the usual custom and usage to pay for rock by loose truck measurements.

(1) Edward E. Morgan Co., Inc. et al. v. United States, 230 F. 2d 896, U.S. District Court of Texas, Feb. 23, 1956.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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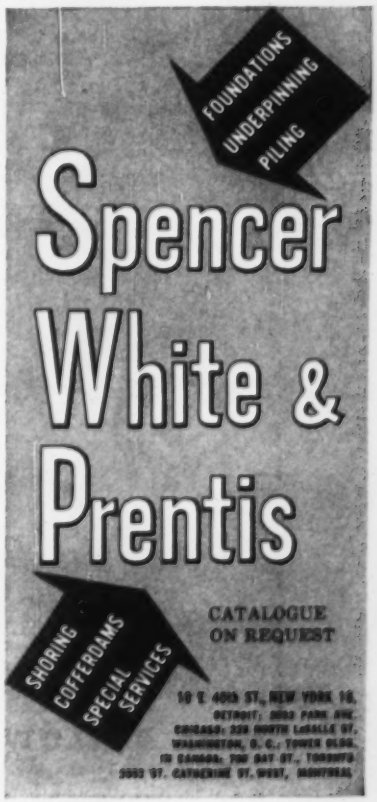

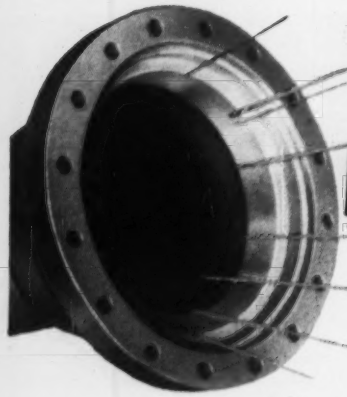

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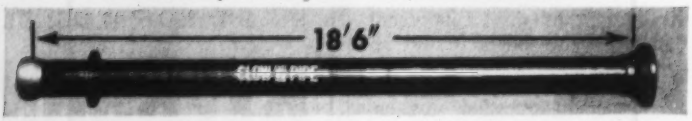
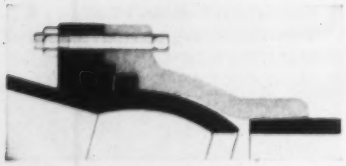


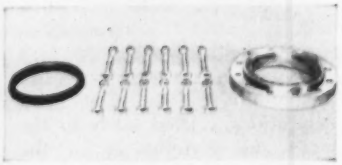
Longer laying lengths, fewer joints. Shorter lengths to exact dimension.

Full Flow at Full Deflection

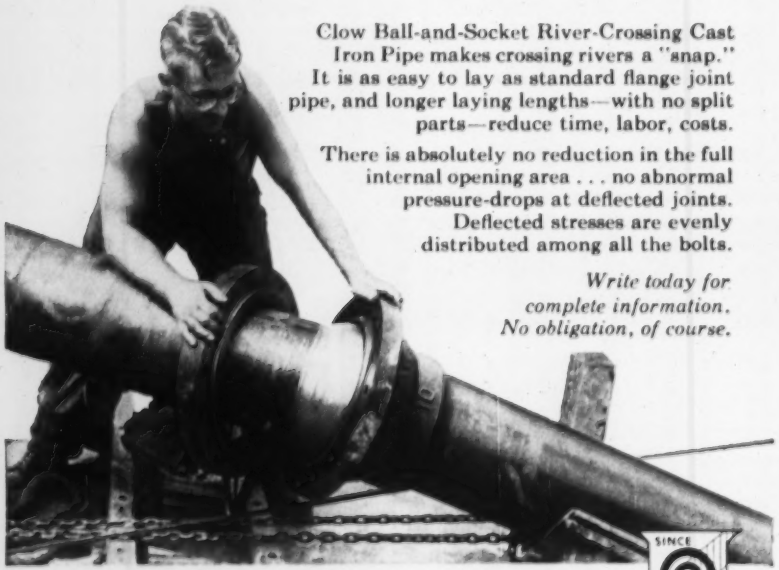


Full 15° turning deflection.
No restriction of the waterway.

Fewer Parts No Split Parts



Needs only a ratchet wrench for fast, firm assembly.



Clow Ball-and-Socket River-Crossing Cast Iron Pipe makes crossing rivers a "snap." It is as easy to lay as standard flange joint pipe, and longer laying lengths—with no split parts—reduce time, labor, costs.

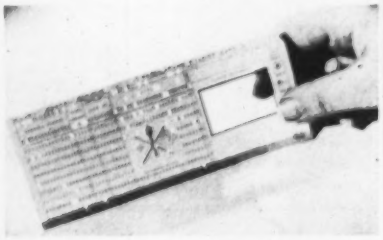
There is absolutely no reduction in the full internal opening area . . . no abnormal pressure-drops at deflected joints. Deflected stresses are evenly distributed among all the bolts.

Write today for complete information. No obligation, of course.

JAMES B. CLOW & SONS Inc.
201-299 North Talman Ave. • Chicago 80, Illinois

Subsidiaries: Eddy Valve Company, Waterford, New York • Iowa Valve Company, Oskaloosa, Iowa

Field and Office

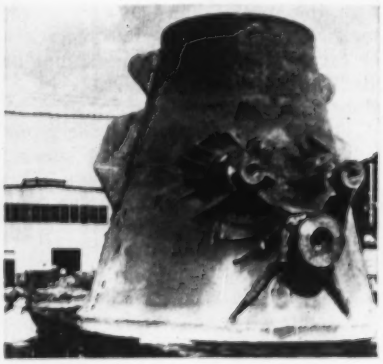


Drawings Inserted as Windows In Computer Punch Cards

The Army's Signal Corps has embarked on a program of microfilming all of its engineering drawings and then inserting them as "windows" in regular electronic computer punch cards. Sets of the cards are then distributed to the various Signal Corps installations throughout the world and can be used directly for reproduction of full- or reduced-size drawings.

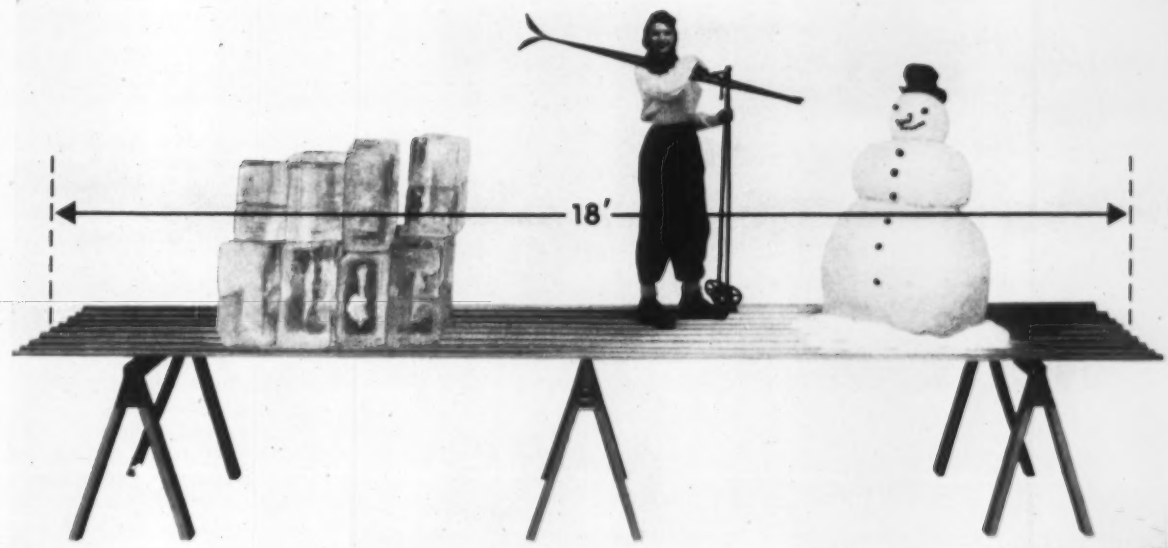
The punch cards are produced using special reading and transparency mounting machines and standard electronic duplicators and verifiers. Filing is accomplished by standard punch card sorters.

The Signal Corps has already microfilmed more than 300,000 engineering drawings and anticipates making 5 million cards to provide the necessary duplicate sets. Drawings are generally used for equipment procurement purposes. Previously, Signal Corps installations



Big Slag Pot Casting

One of the largest slag pots ever made, a 480-cu-ft-capacity 47,000-lb pot has been cast by the Blaw-Knox Co., in Pittsburgh. It is a single casting that includes the flat bottom and three trunnions on either side. Most flat-bottom pots in service have bottom plates bolted to the cast steel body of the pot. Trunnions are normally found on slag pot cradles, rather than on the pot itself.



Light aluminum overcoat for industrial buildings . . . laughs at weather . . . jeers at high costs

The sides and roof of your building may never have to support 1,200 pounds of ice, a five-foot snowman and a pretty girl in an area of 61½ square feet. But that will give you some idea as to the remarkable load-bearing capacity of Alcoa's exclusive new Aluminum V-Beam Industrial Roofing and Siding.

This unusual strength of Alcoa® V-Beam, plus its 18-foot length, means major savings in industrial construction. Why? Because less structural steel is needed. Because erection is faster. Because fewer of these bigger sheets are needed. Because there is less waste in side and end laps.

Warehouses, factories, storage sheds . . . any buildings . . . can be roofed or sided for as little as 65 cents a square foot . . . and with all of the long-term advantages only aluminum offers.

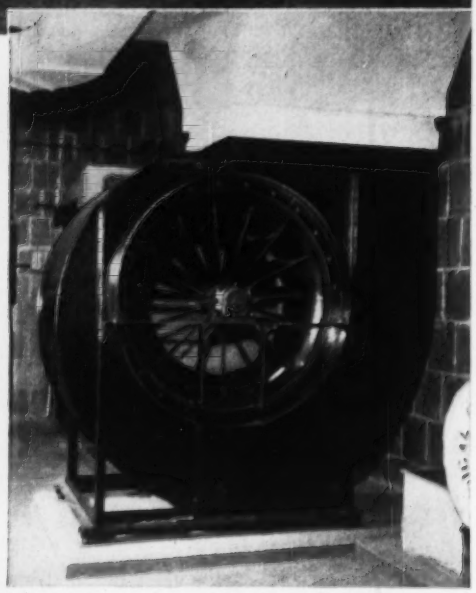
You get lower maintenance costs . . . so low they almost vanish! No painting. No rotting. No red rusting. No damage from salt air, industrial fumes or other harmful conditions. Twenty-five years of application in industrial areas proves this.

When new plant recommendations are called for, make certain that use of Alcoa's new 18-foot V-Beam sheet has been investigated. Aluminum Company of America, 860-L Alcoa Building, Pittsburgh 19, Pennsylvania.

THE ALCOA HOUR
TELEVISION'S FINEST LIVE DRAMA
ALTERNATE SUNDAY EVENINGS

Your Guide to the Best in Aluminum Value

WE CHOSE
ALCOA ALUMINUM
BUILDING SHEET



New office building of General Telephone Company of the Southwest, San Angelo, Texas. Pace Associates, Architects; Evans & Taylor, General Contractor; Bollinger & Sames, Plumbing & Heating Contractor.

SMOOTH EFFICIENCY IN AIR HANDLING!

Inlet side of one of the five "Buffalo" Type BL Fans in the new building. Note the smoothly curving inlet bell and directional inlet vanes for quiet, efficient entry of air. Rotor has curved flange matching inlet, and backward curved blades for matchless performance. For full details, write for Bulletin F-100.

8 "BUFFALO" FANS MOVE THE AIR IN THIS PRIZE-WINNING TELEPHONE BUILDING

It is no coincidence that this new General Telephone Company of the Southwest Building was a prizewinner in the American Institute of Architects competition for 1955 — its low, sweeping lines blend well with the finest residential style. And it is no coincidence that "Buffalo" Fans were selected for its air moving jobs — and that complete satisfaction is reported by owner and contractors alike.

For ventilation and air conditioning supply, two "Buffalo" Belted Vent Sets, and five "Buffalo" Type BL Ventilating Fans are giving quiet, efficient service. Dependable induced draft is supplied by a "Buffalo" Type MW Industrial Exhauster.

Assure the greatest satisfaction on your next job by specifying "Buffalo", the fans with the "Q" Factor* — as leading contractors, engineers and owners have been doing for the past 79 years.

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

"Buffalo"

BUFFALO FORGE COMPANY

BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

often had to send to central headquarters for drawings, thereby delaying the purchasing procedure.

The Recordak Corp., New York, supplied the microfilm machines, the reading machines which enable punch card operators to produce master cards, and the mounting machines for attaching the microfilmed drawings to the punch cards.

How to Compute Reinforcing For Oversize Columns

For architectural reasons, reinforced concrete tied columns in buildings must often be larger in cross section than required by structural and loading considerations. For such cases the American Concrete Institute building code (ACI 318-56), which was approved last April, allows the vertical reinforcement, p_s, to be less than 1% of the gross column area, A_g, but not less than four No. 5 bars.

Section 1104 (d) of that code states: "In a tied column which for architectural reasons has a larger cross section than required for considerations of loading, a reduced effective area, A_g, not less than one-half of the total area may be used in applying the provisions of Section 1104 (a)." Since, in the writer's experience, this section often causes confusion among practicing engineers and students, the design requirements can be expressed in simple algebraic terms as follows:

$$P = A_g (0.18 f'_c + 0.80 f_s p_s) \qquad (1)$$

where P is the allowable axial load on a column whose length does not exceed ten times its least cross-section dimension, f'_c the 28-day compressive strength of the concrete and f_s the allowable tensile unit stress in the steel.

If P_u is the load actually applied to the column and A_{gn}, the gross area of the column that would be theoretically sufficient to take P_u if $p_s = 0$, then when P_u is equal to or less than $A_g (0.18 f'_c)$:

$$A_{gn} = \frac{P_u}{0.18 f'_c} \qquad (2)$$

The minimum required vertical column reinforcement is therefore:

$$A_s = 0.01 A_{gn} = \frac{P_u}{18 f'_c} \qquad (3)$$

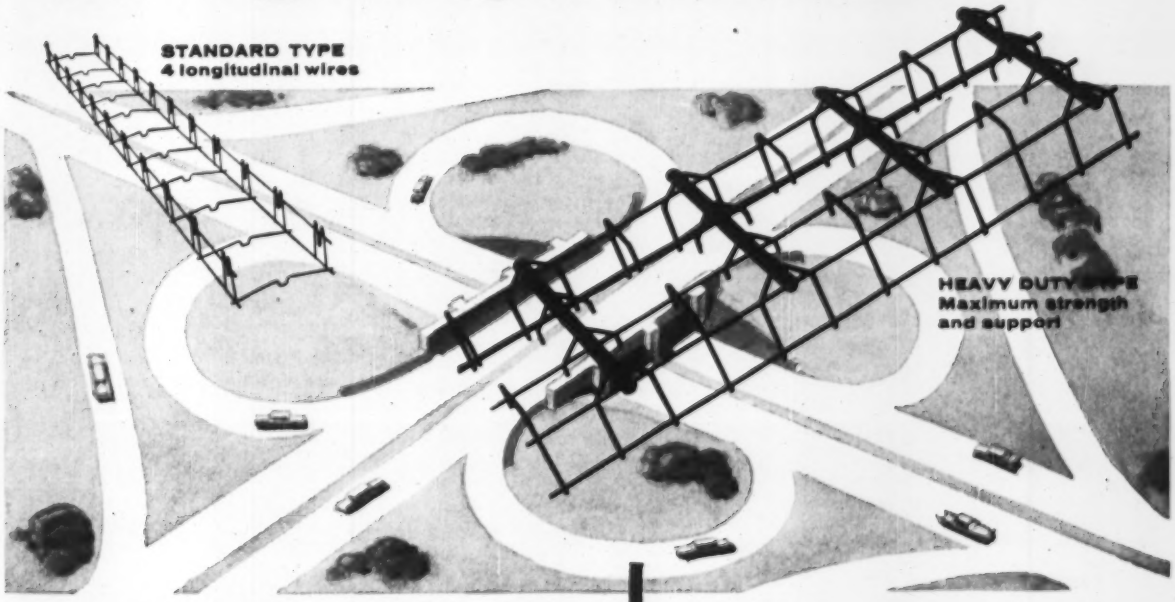
or

$$A_s = 0.01 \left(\frac{A_g}{2} \right). \qquad (4)$$

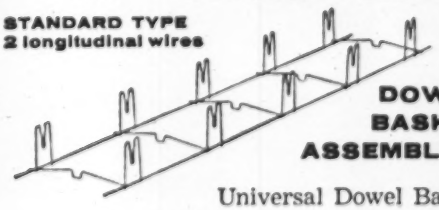
or four No. 5 bars, whichever is greater.

When P_u exceeds $A_g (0.18 f'_c)$, use Eq. 1 in which p_s shall not be less than 1%, nor more than 4% of A_g.— ZACHARY SHERMAN, ASSOCIATE PROFESSOR OF CIVIL ENGINEERING, UNIVERSITY OF MISSISSIPPI.

UNIVERSAL PRODUCTS
for highway construction



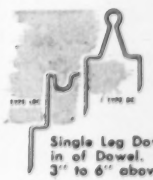
STANDARD TYPE
2 longitudinal wires



DOWEL BASKET ASSEMBLIES

Universal Dowel Basket Assemblies are designed and fabricated to specifications. Special equipment and fixtures guarantee accurate spacing and positive alignment of dowels. High speed production equipment and modern facilities insure prompt delivery of your requirements. Universal Baskets are approved by Federal, State and private authorities for highway and airport construction.

Let us quote on your requirements. Write for complete details today.



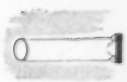
INDIVIDUAL DOWEL CHAIRS

Two-legged dowel chair holds dowel in 2 positions. Easily pushed into subgrade—won't turn after installation. Wide range of heights.

Single Leg Dowel Chair permits quick snap-in of Dowel. Sizes to support Dowel from 3" to 6" above sub-grade.

STAKE PINS

Keep Dowel Bar Assemblies in place during the pour. Lengths from 4" to 15" in ¼" increments.



DOWEL SLEEVES

Metal Dowel Sleeves for covering ¾" Dowel Bars; overall length covers 2½" or 3" Dowel. Special sizes and lengths available.

HOOK BOLT ASSEMBLY

For providing required tieing element along longitudinal joint. Eliminates necessity of bending tie bars or drilling road forms.

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EASY, PROVEN WAY
to PERMANENTLY BOND
CONCRETE TO CONCRETE
WELD-CRETE®

Weld-Crete is the amazing liquid bonding agent which enables you to *permanently* bond new concrete *directly* to old concrete . . . or to most any other structurally sound surface . . . *without need for costly, time-consuming chipping, drilling, roughening, acid washing or scarifying of concrete base.*

Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways, etc. one day and run heavy truck traffic over them the next. Get facts from your building materials supply dealer or write Larsen Products Corp., Box 5756-I, Bethesda, Md.

TYPICAL **WELD-CRETE** APPLICATION

National Brick Co., Terra Cotta, D.C.

Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.

From our
50th Anniversary Album

1st NATIONAL BANK, Allentown
Shored up old bldg., lowered foundation 6' while doing foundation work for new bldg.

Service Experience
UNDERPINNING AND FOUNDATION CO.

✓PILING ✓FOUNDATIONS
✓SHORING ✓UNDERPINNING
✓CONSULTATION & DESIGN

UNDERPINNING & FOUNDATION CO., INC.
155 E. 44th St., New York 17, N. Y.
General Contractors for 50 Years
Inquiries are invited—no obligation

Unit Prices

Wyoming I-Beam Bridge and Highway Cost $631,452

A new 444-ft six-span steel I-beam bridge with 1.583 miles of approaches and highway will replace an old structure over Snake River in Grand Teton National Park near Moose, Wyoming. The contract let by the Bureau of Public Roads, Denver, Colorado, requires that the substructure be completed before spring runoff. Otto T. Kuehster of the BPR, Moran, Wyo., is engineer.

Two 50-ft spans, two of 75 ft and two of 95 ft carry a 28-ft roadway, a 10-ft bridle path and a 4-ft 7-in. sidewalk. The 4-in. to 5½-in. bituminous stabilized surfacing on highway and approaches is placed on a crushed gravel or stone base. The graded width is 32 to 36 ft and the base width 20 to 24 ft.

The $631,452 contract awarded to Etlin E. Peterson, Casper, Wyo., breaks down like this: 24.5% for concrete, 21.5% for structural steel, 17.5% for excavation, and the remaining 36.5% for paving, topsoil, culverts, railing, the removal of the old bridge and miscellaneous work. The contract price is 10% above the engineer's estimate, but the low bids on excavation and structural steel pushed the total down to 2.6% below the second low of four bids.

Structural steel drew bids from a low of $0.24 to a high of $0.312 per lb. Concrete was bid $76 to $90 per cu yd of class A concrete with a minimum of 6.5 bags of cement and $52 to $82 per cu yd of class S concrete with a minimum of seven bags of cement per cu yd. The contractor bid $82 on both classes. Bid prices on excavation ranged from $0.675 to $1.00 per cu yd of unclassified and from $12 to $15.50 for unclassified excavation for structures.

Minimum wage rates are $1.80 for common labor, $1.90 to $2.25 for semi-skilled and $2.25 to $3.05 for skilled labor.

The bidders include:

1C	Etlin E. Peterson, Casper, Wyo	$631,452
2	Chas. M. Smith, Thermopolis, Wyo	648,406
4	Long Const. Co., Inc., Billings, Mont	775,937
EE	Otto T. Kuehster, c/o BPR, Moran, Wyo	574,226

Bids: 9-13-56 Items	Unit	Quantity	Unit Prices 1C	2
Force, account wk, misc	cs	job	$3,000	$3,000
Topsoil, strip & store	cy	13,000	0.65	0.70
Exc, unclassif	cy	55,000	0.675	1.00
for struct	cy	3,000	12.00	15.50
for borrow, case 1	cy	55,000	0.675	1.00
Overhaul, 1,000 ft free haul stay		340,000	0.02	0.01
special borrow, 1,000 ft free haul	cymi	45,000	0.20	0.15
Topsoil, replace	cy	13,000	0.80	0.80
Obliteration of old rdys to be paid as earned	cs	job	2,000	2,000
Water, embankment	unit	1,000	1.50	1.00
Water base course	unit	600	2.00	2.00
Water plant or plants, prov maint	ls	job	1,000	1,000
Roll, embankment	hr	500	13.00	9.00
base crse	hr	160	10.00	7.00
Subbase matl	t	19,000	0.95	1.50
Base crse, cr grav or cr stone, cl 2, grad d-1	t	18,500	1.40	2.00
Bit base, process	sy	64,000	0.16	0.25
Cutback, asph, MC, gr 0, 1, 2, or 3	gal	65,000	0.23	0.20
RC, gr 1 or 2	gal	7,000	0.30	0.23
Conc cl A, air-entrained conc, low-alkali cmt	cy	1,567	82.00	76.00
cl S, low-alkali cmt	cy	331	82.00	52.00
Steel, reinforc	lb	161,100	0.16	0.17
struct furn, fabr, erect railing	lb	564,700	0.24	0.24
Railing	lf	1,482	10.00	10.50
CMP, galv, culv, 18"	lf	300	7.00	7.00
24"	lf	224	8.00	9.00
Pipe end sect, met, 24"	ea	8	60.00	40.00
Curb & gutter, combn conc	lf	1,620	4.50	3.00
Curb, log, treat, 12"	lf	1,400	6.00	3.00
Sidewalk, conc	sy	650	7.00	7.00
bit	sy	1,300	3.00	2.00
Gd posts, timber, with reflect strips, treat, type 1	ea	40	10.00	10.00
Barrier posts, treated	ea	80	10.00	5.00
Topsoil, loamy, f & p	cy	4,800	3.00	1.00
Turf shoulders	unit	160	54.00	25.00
Remov Old Snake River bridge	ls	job	14,000	7,300

Time to complete: 300 calendar days.
Liquidated damages: $75 per day.
cs—contingent sum, MC—medium curing, RC—rapid curing.

Wide Bid Spread on Small Wyoming Diversion Channel

Nine bids for this 2,600-ft Meeteetse Draw diversion channel near Thermopolis, Wyoming, ranged from $4,040 to $14,020. The Bureau of Reclamation, Thermopolis, awarded the contract to Charles M. Smith who underbid the second low bid by 23.7% and the engineer's estimate by 17.55%. Theodore E. Mann and Amos H. Adams are construction engineer and acting construction engineer for the Thermopolis Bureau of Reclamation.

The channel is designed with low side core bank construction and a 10-ft high dike to divert floodwaters that would endanger existing canals.

Channel excavation drew bids from $0.30 to $0.95 per cu yd. Prices bid on water and moistening material for the core banks varied between $4.00 and $60 per M gal.

Wage rates specified for this job are $2.60 for skilled labor, $2.00 for semi-skilled and $1.50 for common labor.

The nine bidders include:

1C	Charles M. Smith, General Contractor, Thermopolis, Wyo	$4,040
2	Gordon M. Sykes, Basin, Wyo	5,295
9	Holm & Stebner, Powell, Wyo	14,020
EE	Theodore E. Mann, Thermopolis, Wyo	4,900

Bids: 9-18-56 Items	Unit	Quantity	Unit Prices 1C	2
Exc for diversion channel	cy	9,000	$0.30	$0.40
from borrow	cy	2,000	0.25	0.40
Core banks	cy	1,200	0.25	0.10
Overhaul	cymi	300	0.30	0.50
Water and moistening matl for core banks	Mgal	25	4.00	5.00
Riprap, local sandstone	cy	50	7.00	10.00

Time to complete: 90 calendar days
Liquidated damages: $5.00 per day

No "Cure-All," but...

Salinas, California, finds a single grade of Bitumuls® solves five paving maintenance problems

HERE'S A SITUATION common to most growing cities: annexation of outlying residential developments has vastly expanded the street maintenance job *without* materially increasing available funds. Annexation has not only added to the street mileage, but has "contributed" many sub-standard pavements to the street system, thus adding to the complexity of the job.

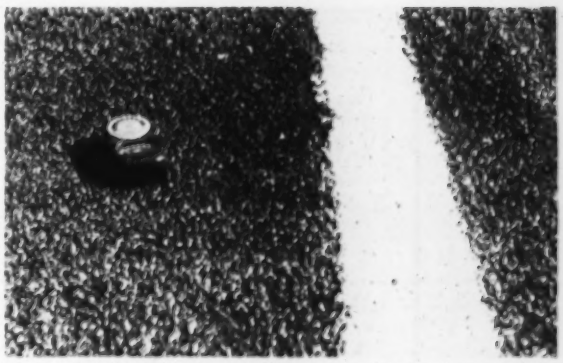
In an effort to solve this problem, these three Salinas men most directly concerned have worked together: Thomas A. Dunne, Director of Public Service; his assistant, Al Rossi; and Harry Adams, Maintenance Supt. Their search for simplicity and standardization led them to look for a versatile asphalt material that would do many jobs. They found it in Bitumuls SS-1, an asphalt emulsion that can be handled and used without heating, in small quantities or large.

Now, stored in a single 25,000-gallon tank, Bitumuls SS-1 is used for: Patching, Tack Coats, Prime, Seal Coats & Surface Treatments, and for Base Stabilization. In addition, Salinas City Forces can also use this same grade of Bitumuls for the new Slurry Sealing; and—at high dilution – for dust-laying on unpaved, outlying roads. All of these jobs can be done with existing equipment: a grader, a "Pulvimixer", a water wagon, two distributors, and a roller.

The obvious economies resulting from the use of this one material for all these jobs merit investigation by paving maintenance men everywhere, regardless of the size of their community.

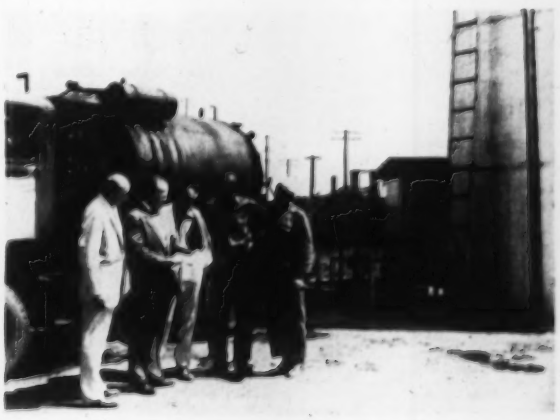
There's a Bitumuls man near you who can supply details. *Call him, today, or write:* **American Bitumuls & Asphalt Co., 200 Bush St., San Francisco 20, Calif.**

See You at the Road Show, Chicago, Jan. 28-Feb. 2
Booths 23-24; Materials & Supplies Section



(Top), "PULVIMIXER" reworks old pavement that has been scarified and bladed in restabilization operation. Distributor applies Bitumuls at ¾ gal./sq. yd. per inch of depth. (Center), DISTRIBUTOR applies prime on a waterbound base, using Bitumuls SS-1 diluted (2 parts SS-1 to 1 part water) at 0.3 gal./sq. yd. of dilution. (Bottom), HERE'S A CLOSE-UP of the finished texture of a Bitumuls SS-1 Seal Coat pavement.

(Right), SALES ENGINEER Bob Ridell, far left, of American Bitumuls & Asphalt Co., discusses plans with Tom Dunne, Director of Public Service for Salinas, and his assistants. At far right is a partial view of the 25,000 gal. storage tank. (Below), EVEN SCHOOL YARDS are given stabilized bases with Bitumuls SS-1.



Materials and Labor Prices — Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Oct 18; Next, Nov 22
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct 25; Next, Nov 29
- Wage Rates, Building Board, Lath, Insulation: Last, Nov 1; Next, Nov 29
- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Nov 8; Next, Dec 6

IRON AND STEEL PRODUCTS — PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.00	$4.85	$5.075	$10.85		$101.50	$120.00	$6.35	$8.775	$6.025	
Chicago Area	5.00	4.85	5.075	10.85	$5.90	101.50	120.00	6.35	8.775	6.025	
Pittsburgh Area	5.00	4.85	5.075	10.85	5.90	101.50	120.00	6.35	8.775	6.025	$13.10
Buffalo Area	5.00	4.85	5.075	10.85	5.90	101.50	120.00	6.35	8.775	6.025	13.10
Cleveland	.....	.....	5.075	10.85	5.90	.....	.....	.....	.....	.....	13.10
Youngstown Area	.....	.....	5.075	.....	.....	.....	.....	.....	8.775	.....	.....
Geneva	5.00	4.85	5.175	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	5.70	.....	5.775	.....	5.90	.....	.....	.....	8.775	.....	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	6.35	8.775	6.025	.....

IRON AND STEEL PRODUCTS — F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	EXPANDED METAL LATH Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$11.50		$8.90‡	$49.50	$54.00	
Baltimore	8.67	8.10j		42.00	46.50	
Birmingham	8.05d	7.91t	7.91t	65.00p	71.00p	
Boston	8.90a	8.47	8.47	50.90	55.85	
Chicago	8.05	6.81gu	6.81gu	49.00‡	60.00‡	
Cincinnati	8.70ak	7.69rs	.....	45.00mn	49.50mn	
Cleveland	8.38	8.79c		43.50‡	48.00‡	
Dallas	9.45	8.25	8.25	49.00	52.00	
Denver	9.60	8.45c	.....	57.00n	63.00n	
Detroit	8.55	8.13	.....	56.00	63.00	
Kansas City	8.87a	8.73	.....	49.00	60.00	
Los Angeles	8.70fd	7.35	.....	57.50	63.50	
Minneapolis	8.45d	8.76b	8.76b	45.00n	49.50n	4 × 16 in., No. 5 & 10 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $3.66
Montreal	8-8.75dC/8.05-8.45A	7.75/8.95i	7.75/8.95	65.70A	70.20A	4 × 12 in., No. 8 & 12 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $2.43
New Orleans	.....	7.65akrs	.....	45.50	50.00	6 × 6 in., No. 6 & 6 wires — Joliet, Ill., Donora, Pa., Monessen, Pa. $3.84
New York	8.71	7.93y	7.93y	47.50no	54.50no	
Philadelphia	8.04	7.14	.....	42.50‡	47.00‡	
Pittsburgh	7.43	6.57**	.....	42.50	47.00	
St. Louis	8.48e	7.90c	7.90c	59.50l	61.50l	
San Francisco	8.95	8.90j		47.50	53.00	
Seattle	9.15	8.35e		62.00er	68.00er	
Toronto	8.45*	7.90	7.60	56.00eq	59.00eq	

Quantity extras, per cwt: under 100, +$2; 100-399#, +$1; 400-999#, +$.50; 1000-1999#, +1.00; 2000-4999#, base price; 5000-9999#, —10c; 10,000-19,999#, —30c; 20,000-29,999#, —50c; 30,000# and up, —70c

EXTRAS, per cwt: *Quantity: less than 700#, +50c; 700-1499#, +35c; 1500-7999#, +10c. *Size*: #2 or #2.25, #3, +$1.10; #4, +80c; #5, +63.5c; #6, #7, +45c; #8, #9, #10, #11, +35c. *Bending: heavy, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job). *Engineering (details and placing from designs by others): over 500 tons, +45c; 200-500 tons, +50c but not over $4500; 20-200 tons, +60c but not over $2000; 5-20 tons, +70c but not over $240; under 5 tons, +85c but not over $70. *Design only: +60c.

‡ Delivered. a 2000-9999#. b 10,000-19,999#, fob city. c 20 tons or over. d 10,000-19,999#. e Intermediate struct'l. f Incl. delivering in free zone. g CL. h list price; dominion tax exempt; add provincial and municipal taxes. i add dominion, provincial and municipal sales taxes. j Intermediate and hard grade. k fob city. l delivered; contractor to do unloading. m copper alloy. n LCL. o asphalt coated. p del. of 500 sq. yd. or more. q 3 lb. r 2% off for cash. s 2,000-4,999#. t add 15¢ del. u add 8.25¢ switch. v incl 15¢ del. x add 5¢ switch. y add 30¢ del. z add 10¢ del. *A American made. *C Canadian made. ** Aver. of Canadian & American.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXo	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Pr Cl. 150	ASBESTOS CEMENT PIPE 12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 PER 1,000 ft., carload lots, f.o.b. 8 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	123.5	$1.64	$2.68	$.55	$1.30	$4.95	$12.25	$225.00		$0.88m	$3.25m
Baltimore	132.9	1.64	2.46	.665	1.28	5.08s	12.71	187.80	$289.20	1.01	2.75m
Birmingham	119.0	1.64	2.68	.44	.81	3.55w	10.37w	260.00‡	440.00‡	1.90m	4.00
Boston	135.6	1.66	2.46	.788qrt	1.502qrt	6.211qrt		203.40r	312.60r	1.60mg	3.80mg
Chicago	133.4	1.64	2.46	.93m	1.78m	7.52m	21.16m	220.00n	330.00n	1.30	4.00
Cincinnati	128.2	1.66	2.55	.665t	1.282St	4.905t	12.505	240.00	370.00	.85m	3.25m
Cleveland	134.2	1.66	2.55	.567s	1.0935s	4.545t	11.787t	149.40m	231.60m	.85m	3.50m
Dallas	130.5	1.66	2.80	.439	.799	4.00b	9.176			.63	1.86
Denver	140.1	1.73	2.80	.47n	.84n	3.73n				.74m	2.50m
Detroit	134.5	1.66	2.55	.55	1.60	6.45	17.50	240.00m	370.00m	.95	3.82
Kansas City	131.1	1.66	2.55	.61	1.105	4.54	12.75	260.00	485.00	.90	2.90
Los Angeles	140.2	1.73	2.46	.74l	1.61l	6.42l	15.36l	228.20l	348.90l	1.02	3.02f
Minneapolis	142.0	1.68	2.68	.83mo	1.50mo	6.50mo				1.76A	5.74A
Montreal				1.02u	1.80u	6.30u	12.00u			1.17A	3.11f
New Orleans	126.1	1.64	2.68	.51	.925	5.18	.....	350.00p	550.00p	.75	2.50
New York	131.4	1.66	2.46	.99	1.88	7.37	19.06			1.50	3.00
Philadelphia	130.8	1.64	2.46	.65	1.25	4.95e	12.65e	300.00‡	350.00‡	1.60A	3.95A
Pittsburgh	135.3	1.66	2.46	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05A	2.50A
St. Louis	129.6	1.64	2.55	.50	1.08	4.45	10.80	180.00l	380.00l	1.45il	3.10il
San Francisco	140.2	1.73	2.46	.74d	1.62d	6.50d	16.47d	320.00l	530.00l	1.05m	3.30m
Seattle	140.8	1.73	2.46	.665	1.265	6.34	17.90	205.00c		1.00k	3.10k
Toronto	.....			.76	1.425	6.00	.....	157.00	280.00	.87	3.05

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	Black %	Galv. %	Lap Weld 3½ to 6 in. Black %	Lap Weld 3½ to 6 in. Galv. %	Butt Weld 2½ & 3 in. Black %	Butt Weld 2½ & 3 in. Galv. %
Lorain, Ohio	23.00	4.75	13.50s	+0.75s	13.50s	+4.25s
Aliquippa, Pa	23.00	9.25	13.50d	+0.75d	13.75d	+2.50d
Sparrows Pt., Md	21.00	2.75	7.50s	+11.25	7.75d	+17.75d
Benwood, W. Va	23.00	4.75	13.50s	+0.75d	13.50s	+4.25s
Youngstown, O	23.00	4.75	13.50d	+6.25s	13.75d	+2.50d
Indiana Harbor, Ind	22.00	3.75	12.50ab	+6.25s	1.00ab	+17.75ab
Sharon, Pa	23.00	4.75	13.50s	+4.25s	13.50s	+4.25s
Wheatland, Pa	23.00	5.75	13.75d	+2.50d	13.75d	+2.50d
Etna, Pa	23.00	9.25	13.75d	+2.50d	13.75d	+2.50d
Fontana, Calif	10.50	+7.50	1.00ab	+17.75ab	1.00ab	+17.75ab

† Threaded and coupled. a 3½ to 4 in. b Continuous weld. 5 and 6 in. d 6 in.

‡ Delivered. a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 119.0; Burlington, N. J., 127.8. b Extra strength ASTM C 200-44T. c 4-in., $113. d SS361-A. e 30-in. f 21 in. g culvert pipe; reinforced, ASTM C 76-41. h reinforced, ASTM C 75-41. i reinforced, ASTM C 76-37. j centrifugal; no standard specs. in Canada. k 2% off for cash. l fob plant. m truck delivery. n LCL delivered, fob truck. o listed price based on LCL (no min.). p freight allowed to destination in city. q ASTM C 13-40. r CL fob origin, freight allowed. s 2 ft lengths. t 3 ft lengths. u CESA A 60-1941 specs. used. v standard strength. w ss; add 20% for d.s.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): Butt Weld ⅛ in., 51½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 79½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld — 1 in. black, + 66.54 galv., + 95.77; 1¼ in. black, + 66.54, galv. + 95.23, 1½ in. black, + 61.79 galv. + 91.22; Lap Weld — 2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.88. Add freight rates plus 3% transportation tax to get destination price.

FOAMGLAS®

the cellular, stay-dry insulation

STAYS DRY—Here's how you can prove to yourself that FOAMGLAS does stay dry. Cut a piece from a FOAMGLAS sample. Place it in water. Note how its hermetically sealed glass cells keep it afloat. Weight it down for days, weeks or longer if you like. Remove the weight and it bobs back to the surface . . . proof that the sealed cells have absorbed no water—still have their original insulating efficiency.

Wet insulation is no insulation . . .

Prove to yourself that FOAMGLAS stays dry!

Send for a sample and test it!

Moisture conducts heat! When an insulation begins to absorb moisture, its efficiency nosedives. It's no longer an insulation.

That can't happen to FOAMGLAS. Every block of this unique insulating material is composed of millions of hermetically sealed glass cells. Each cell is an individual insulating unit . . . and each is watertight. Water and vapor are sealed out to insure constant insulating effectiveness.

In a few minutes, in your own office, *you* can prove to yourself that FOAMGLAS *stays dry*. Send today for a free sample and directions for simple "desk top tests" you can perform, as illustrated on this page. You'll soon see why it pays to insulate floors, walls, ceilings, roofs, piping and equipment with FOAMGLAS. You're assured constant, long-lasting insulating efficiency without the headache and expense of insulation replacement.

Vapor-proof

Strong and rigid

Inorganic and incombustible

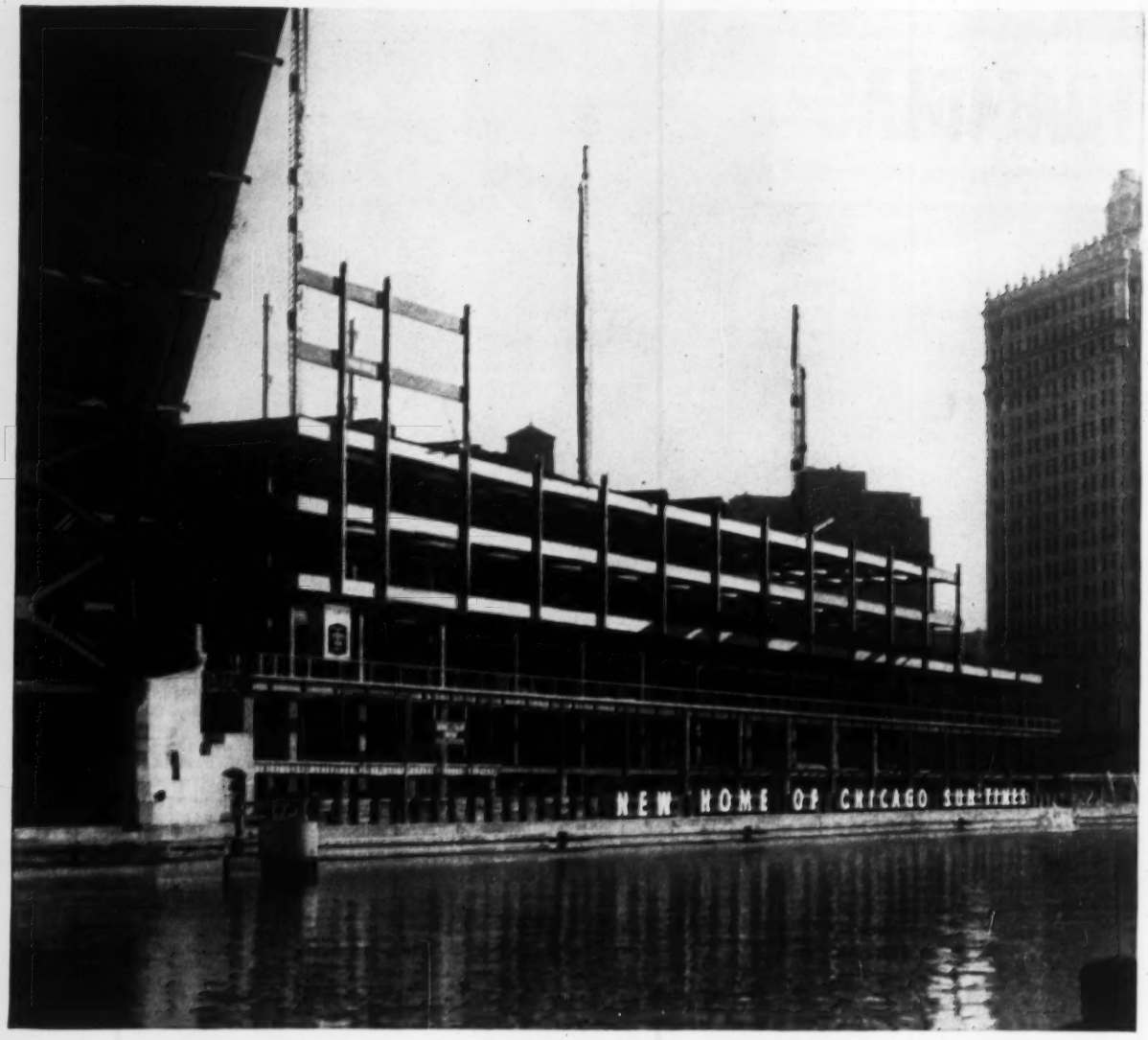
Lightweight

Pittsburgh Corning Corporation

Dept. K-116, One Gateway Center, Pittsburgh 22, Pa.

In Canada: 57 Bloor Street West, Toronto, Ontario

also manufacturers of PC Glass Blocks



Steel Rising for Chicago Newsplant

If you're familiar with Chicago you'll quickly recognize this spot. That's the Chicago River in the foreground, and part of the well-known Wrigley Building appears at right.

Those steel beams and columns, fabricated and erected by Bethlehem, are part of what will soon be another Windy City landmark — the new Sun-Times newspaper plant. It will be a splendid structure, said to be the world's most modern of its type. Modern too is the use of high-strength structural bolts during erection, an advancement in which Bethlehem has been a pioneer.

The new newspaper plant will have ten acres of floor space. The structure will house executive, editorial and business offices, as well as new presses capable of rolling off 120,000 papers an hour. Total height of the building will be nine stories, with two of them below street level. Some upper floors will be available for rental to commercial tenants.

Owner: Field Enterprises, Inc.; Architect: Naess and Murphy; General Contractor: George A. Fuller Company.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Mass., Falmouth** — DORMITORIES — BA 11/27 — U. S. Eng., 150 Causeway St., Boston, seven 3 story, 41x205 ft. brick veneer airmen's dormitories, Otis Air Force Base. ENG-19-016-57-96. $2,000,000-$2,250,000. Plans deposit $25. CD 10/31.

BUILDINGS—BA

▲ **Mass., Canton**—HIGH SCHOOL—BA 11/20—Town, High School Bldg. Comm., c/o Supt. Schools, High School, Canton, high school, Washington St., $1,600,000. Plans deposit $100. Collens, Willis & Beckonert, 20 Newbury St., Boston, archts. CD 4/4.

▲ **Connecticut**—HOUSING—BA 11/27—U. S. Eng., 150 Causeway St., Boston, Mass., 64-units Capehart Housing on site Improvs. Defense Area Simsbury, Plainville and East Windsor, ENG-19-016-57-27. $1,056,000. Plans deposit $10. CD 10/29.

HEAVY CONSTRUCTION—LB & CA

† **Davison Constr. Co., Inc.**, 1306A Elm St., Manchester, N. H., CA $922,000, hangar motor service shop, warehouse, paint, oil and dope storage bldg. for Air National Guard, Grenier Air Force Base, ENG-19-016-57-44, MANCHESTER, N. H. U. S. Eng., 150 Causeway St., Boston 14, Mass. Bids Sept. 27. CD 10/10, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Charles Capone Constr. Co., Inc., 850a Providence Hy., Dedham, Mass., LB $1,663,644, est. $1,560,000, reconstr. Sect. U5 Rte. 1, incl. 6 bridges, Providence Turnpike, Norwood and Westwood. Bids Oct. 30. CD 10/3.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
J. F. Fitzgerald Constr. Co., 1000 Turnpike St., Canton, Mass., CA $1,799,973, est. $1,551,941, expressway highway exten., Rte. 128, Northern Circle Hy., FAP-U-331-12 and U-346-1, Gloucester. Bids Sept. 25. CD 9/27, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
S & M Constr. Co., 30 Salmon St., Providence, R. I., LB $1,088,625, est. $1,200,000, constr. section Mid Cape Hy., incl. 3 span steel stringer bridges, Proj. 328 (6), Brewster and Orleans. Bids Oct. 30. CD 10/17.

BUILDINGS—LB & CA

Charles W. Howard & Son, Inc., 32 Summer St., Malden, Mass. Owner Builds. $700,000. 35 RESIDENCES, Dana Rd., READING, MASS.

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass CA Exceed $4,000,000. HOME OFFICE, Rte. 128 and Lake Quannapowit, WAKEFIELD, MASS. American Mutual Liability Insurance Co., 142 Berkeley St., Boston, Mass. Bids Sept. 13. CD 9/12.

▲ **P. Francini & Co., Inc.**, Water St., Derby, Conn. LB $1,334,000. OCCUPATIONAL THERAPY BLDG., Fairfield State Hospital, NEWTOWN, CONN. State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids Oct. 31. CD 10/22.

Ernest F. Carlson, Inc., 1694 Main St., Springfield, Mass., CA Approx. $750,000. 55,000 sq. ft. MFG. PLANT and OFFICE, Quinnipiac Ave., NORTH HAVEN, CONN. Soundscriber Corp., 146 Munson St., New Haven, Conn. Leo F. Caproni, 132 Temple St., New Haven, Conn., archt. Awarded Oct. 22.

▲ **Anderson-Fair Oaks Constr. Co.**, 145 S. Marshall St., Hartford, Conn., LB $1,300,000 (3 bidders) Proj. BI-D-198, JUNIOR-SENIOR HIGH SCHOOL, University of Connecticut, STORRS, CONN. State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids Oct. 31. CD 10/2.

▲ **A. F. Peaslee, Inc.**, 37 Lewis St., Hartford, Conn., CA, $1,075,680, est. $1,000,000, Richmond Lane Elementary SCHOOL, Lost Brook and Barksdale Rds., WEST HARTFORD, CONN. Town, Bd. Educ., 7 Whiting Lane, West Hartford, Conn. Bids Oct. 10. CD 10/12, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

N. J., **Linden**—SCHOOL—BA 12/20—Bd. Educ., Linden Twp., Linden, Junior High School addn., Coke Place. $800,000. Albert A. Kaufman, 252 N. Broad St., Elizabeth, archt.

HEAVY CONSTRUCTION—LB & CA

▲† **Arundel Corp.**, foot of Fulton St., Brooklyn, N. Y., CA, $1,675,920, dredging, rock removal to depth of 37 ft. below mean low water, incl. removal approx. 108,500 cu. yds. place, measurement; ledge rock, 51,600 cu. yd. place measurement of material other than ledge rock from New York and New Jersey Channels, Sect. 4, Rock Area 12, CIVENG-30-075-57-27, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Oct. 9. CD 10/11, under LB.

PENNSYLVANIA—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.
D. T. Connelly, Terminal Bldg., Greater Pittsburgh Airport, Coraopolis, Pa., CA ,$995,001, rein.-con. pavement 4.37 mi., 5 rein.-con. bridges widen existing pavement, misc. constr. TR 68, Butler Co. Bids Sept. 28. CD 10/3, under LB.

BUILDINGS—LB & CA

Sano Rubin Constr. Co., 616 Delaware Ave., Albany, N. Y., LB $695,900, general constr. DORMITORY for State University of College for Teachers, ALBANY, N. Y. Dormitory Auth. of State of New York, 55 Grand Ave., Albany, N. Y. Bids Oct. 11. CD 9/27.

▲ **Kayfield Constr. Corp.**, 116-55 Queens Blvd., Forest Hills, N. Y., LB $1,679,000 (7 bidders) general constr., of new addn. to and modernizing existing JUNIOR HIGH SCHOOL 50, S. Third St. and Driggs Ave., BROOKLYN, N. Y. Director Bureau Constr., 42-15 Crescent St., Long Island City, 1, N. Y. Bids Oct. 30. CD 10/3.

▲ **William L. Crown Constr. Co.**, 101 Park Ave., New York 17, N. Y., CA, $2,347,427, addnl. 3 stories, and penthouse to existing REHABILITATION INSTITUTE, NEW YORK, N. Y. New York University-Bellevue Medical Center 34 St. and 1st Ave., New York, N. Y. CD 7/10.

▲ **Psaty & Furham, Inc.**, 369 Lexington Ave., New York 17, N. Y., CA $4,579,000, general constr. BRONX HIGH SCHOOL of SCIENCE, W. 205 St. and Gouldea Ave., Bronx Boro, NEW YORK, N. Y. Grand total $6,903,675. Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 23. CD 10/30, under LB.
Astrove Plumbing & Heating Corp., 36-14 32 St., Long Island City, N. Y. CA $546,000, plumbing work (New York, N. Y.);
H. Sand & Co., Inc., 11 Park Pl., New York 7, N. Y. CA $702,675, heating work (New York, N. Y.);
Rao Electrical Equipment Co., Inc., 314 E. 39 St., New York 16, N. Y. CA $1,076,000, electrical work (New York, N. Y.).

▲ **Lange-Finn Constr. Co.**, 522 Broadway, Albany, N. Y., LB $1,613,000 (12 bidders) general constr. Scotia HIGH SCHOOL, SCOTIA, N. Y. Bd. Educ., Central School Dist. 1, Scotia, N. Y. Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse 3, N. Y., archts. Bids Oct. 24. CD 1/19/53.

McManus, Longe Brockwehl, Inc., 65 Arcadia Ct., Colonie, N. Y., LB $735,600 (9 bidders) general constr. JUNIOR-SENIOR HIGH SCHOOL, VOORHEESVILLE, N. Y. Bd. Educ., Central School Dist. 1, Voorheesville, N. Y. August Lux & Assocs., 143 Washington Ave., Albany, N. Y., archts. Bids Oct. 18.

▲ **Darosam Building Co.**, Samuel Schultz, West End Ave., Madison, N. J. Owner Builds, $1,750,000. 55 HOUSES, West End Ave., Rosedale Village, FLORHAM PARK, N. J. W. Harold Lushear, 241 Woodland Rd., Madison, N. J., archt.

William Hunsinker, Woodport, Lake Hopatcong, N. J., CA $900,000. 45 HOMES, Vista Court, Alamac Country Club Estates, LAKE HOPATCONG, N. J. Fred Bischoff operating at Alamac Country Club Estates, Vista Court, Lake Hopatcong, N. J. Henry W. Vreeland, 4 Court St., Morristown, N. J., archt.

▲ **Edward M. Waldron Inc.**, 42 Park Place, Newark, N. J., CA, $1,051,537 7 story RESEARCH CENTER, Burnet St., NEWARK, N. J. St. Michaels Hospital, 306 High St., Newark, N. J. CD 5/9/55.

▲ **Harvey Guerin**, Fairmount Ave., Chester, N. J., Owner Builds, $2,100,000. 75 HOME development, Lindstrom Tract, Route 206, Hillsborough Twp., SOMERVILLE, N. J.

▲ **George H. Evans & Co.**, 1914 Spring Garden St., Phila., Pa., CA, $1,412,610, general constr. SENIOR HIGH SCHOOL, WAYNE, PA. School Dist. of Radnor Twp., Wayne, Pa. Bids Aug. 21. CD 9/6, under LB.

▲ **Joseph F. Nebel Co.**, 3408 Wisconsin Ave., N. W., CA, $2,260,000. HEADQUARTERS BLDG., Wisconsin Ave. N. W., WASH., D. C. Equitable Life Insurance Co., 816 14 St. N. W. Wash., D. C. Bids Sept. 13. CD 9/17, under LB.

SOUTH

BUILDINGS—BA

▲ **N. C. Jacksonville**—HOUSING—BA 11/29—Officer in Charge of constr., Fifth Naval Dist., Attention Code DB-300, U. S. Naval Base, Norfolk, Va., construct and finance, 435 housing units, Marine Corps Air Facility, New River, Inb. No. NBy (CH)-1717, Proj. 053-81001-MC-1. Est. $4,000,000. Plans deposit $265.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Highway Office Bldg., 1221 E. Broad St., Richmond,
Leo Butler Co., 9217 51st Ave., College Park, Md., LB $4,063,041 (4 bidders) Contr. D-2 (Hampton Roads Proj.) constr. waterproofed depressed roadway with 4 overhead bridge structures and 3 buildings, 2 of which house storm water pumping stations and 1 of which houses sanitary sewage pumping station, incl. equip. 1.1 mi. between centerline Stations 1115 plus 00 to 1173 plus 00 in city of Norfolk. Bids Oct. 31. CD 10/10.

▲ **WEST VIRGINIA** — State Road Comm., Charleston, Zone 5,
Boso & Ritchie, Inc., Ravenswood, W. Va., CA, $1,289,880, grading, draining, base 5.894 mi. Philippi-Belington Rd., Proj. F-117 (7), Barbour Co. Bids Sept. 25, awarded Oct. 29. CD 10/1, under LB.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,
Ala.—**J. & H. Excavating Co.**, 401 22 Ave., Tuscaloosa, Ala., LB $231,921 grading, draining 4.777 mi. from Ala. 25, Bibb and Shelby Counties; LB $77,673, bit. 3.611 mi., Tuscaloosa Co.;
Ala.—**A. E. Burgess Co., Inc.**, 3700 10 Ave. N., Birmingham, Ala., LB $1,125,729, grading, draining, Fed. Aid Proj. I 202 (3) (8), Jefferson and Blount Counties;
Ala.—**Bennett Constr. Co.**, 107 Stuart St., Montgomery, Ala., LB $264,352, grading, draining 4.598 mi. Houston and Dale Counties;
Ala.—**H. M. Plunkett Jr.**, Blountsville, Ala., LB $200,689, bit. 5.731 mi. Blount Co.;
Ala.—**Thomas A. White Constr. Co.**, 1600 Midway Ave., Mobile, Ala., LB $74,610, bit. 2.894 mi. Pleasant Valley Rd. Extens., Mobile Co.;
Ala.—**Glencoe Paving Co., Inc.**, 515 Locust St., Gadsden, Ala., LB $149,798, crushing, stockpiling rock, Blount Co. Bids Oct. 26. CD 10/16.

BUILDINGS—LB & CA

▲ **Tower Constr. Co.**, 1726 L St. N.W., Wash., D. C., CA Est. $3,000,000-$4,000,000. SHOPPING CENTER, Rte. 460, Melrose Ave. between Roanoke and Salem, ROANOKE, VA. Giant Food Properties, Inc., 1726 L St. N.W., Wash., D. C., Joseph Saunders, 121 S. Columbus St., Alexandria, Va., archt.

▲ **Jack Culpepper Contractor**, 114 E. 5 Ave., Tallahassee, Fla., LB $1,091,400. Negro High & Elementary SCHOOL (colored) Ochlocknee Elementary SCHOOL (colored), Pavo-Coolidge Elementary SCHOOL (colored) new Union Elementary SCHOOL (colored) Boston SCHOOL, Elementary SCHOOL addns. mech. remodeling (colored) White High & Elementary SCHOOL, Thomas County, THOMASVILLE, GA. State School Bldg. Auth.,

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

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244 Washington St., S.W., Atlanta, Ga. Bids Oct. 30. CD 10/2.

▲ **J. Mann**, 1959 71 St., Miami Beach, Fla., CA, Approx. $1,000,000. 9 story in front, 4 story in rear, concrete block, rein.-con., El Chama HOTEL, Parker and Lafayette Sts., TAMPA, FLA. Lafayette Corp., c/o contractor. Norman M. Giller & Assocs., 420 Lincoln Rd., Miami Beach, Fla., archts. Morton R. Fellman, 145 S. W. 1 St., Miami, Fla., structural engr.

† **Meisner & Hoff**, 615 Allendale Ave., Gulfport, Miss. CA $905,400, THERAPEUTIC EXERCISE CLINIC BLDG. and utilities, Veterans Admin. Center, GULFPORT, MISS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 2. CD 10/8, under LB.

MIDDLE WEST

BUILDINGS—BA

O., **Lincoln Heights**—HIGH SCHOOL—BA 11/26—Bd. Educ., McGee St., 2 story, rein.-con. high school, McGee St. $750,000. Plans deposit $25. Sullivan-Isaacs-Sullivan & Assoc., 1800 Reading Rd., Reading, archts.-engrs. CD 4/4.

HEAVY CONSTRUCTION—LB & CA

The Horvitz Co., 4375 E. 146 St., Cleveland 28, O. LB $894,149, est. $1,013,000 (2 bidders) impvr. Snow Rd. from State to Rockside, Parma and Seven Hills, CLEVELAND, O. Comrs. Cuyahoga Co., Court House Cleveland 13, O. Bids Oct. 29. CD 10/2

▲ **ILLINOIS**—Illinois State Toll Highway Comn., 20 N. Wacker Dr., Chicago, Zone 6,
Ryan Constr. Co., Inc., 800 E. Michigan St., Evansville, Ind., CA $2,728,964. Contract N-4-A, 5.49 mi. paving, precast concrete bridges near Algonquin N. of Elgin, McHenry Co. Bids Oct. 4. CD 10/9, under LB.

▲† **S. J. Groves & Sons Co.**, 500 Wesley Temple Bldg., Minneapolis, Minn., LB $2,409,950. 2nd phase, widening and dredging Calumet Sag Channel near Chicago, CIVENG-21-032-57-10, ILLINOIS. U. S. Eng. 475 Merchandise Mart, Chicago 54, Ill. Bids Oct. 17. CD 9/10.

BUILDINGS—LB & CA

▲ **Al. Rockwell**, Galbraith Rd., Cincinnati, O. Own Forces. $1,925,000, 35 HOMES, subdivision, east side of Ridge Ave., AMBERLEY VILLAGE, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, O., engrs. Awarded Oct. 29.

▲ **Coleridge Development Co.**, c/o Jerome Moss, Citizens Bldg., Cleveland 14, O. Own Forces. $1,000,000. 65 HOMES 40-acre site, north of Rte. 84 in Painesville and Concord Twps., PAINESVILLE, O.

Hagerman Constr. Co., 403 Strauss Bldg., Fort Wayne, Ind., CA $828,000. 1 and 6 story, part bsmt. STUDENT CHAPEL, VALPARAISO, IND. University of Valparaiso, Valparaiso, Ind. Bids Sept. 17. CD 9/27, under LB.

▲ **Kinnare Corp.**, 2816 W. Monroe St., Chicago, Ill., CA, $2,000,000. 2 story Madonna HIGH SCHOOL, paving, parking area, Belmont and Karlov Sts., CHICAGO, ILL. Franciscan Sisters, 3150 N. Pulaski Rd., Chicago, Ill. Bids Oct. 16. CD 9/27.

▲ **James McHugh Constr. Co.**, 6449 S. Park Ave., Chicago, Ill., LB $2,280,148. 4 story women's DORMITORY, bounded by Woodlawn, Kimbark, 58 and 59 Sts., CHICAGO, ILL. University of Chicago, 5801 S. Ellis Ave., Chicago, Ill. Bids Oct. 29. Eero Saarinen & Assoc., Bloomfield Hills, Mich., and J. Lee Jones, 1101 E. 58 St., Chicago, Ill., archts. CD 10/5.

▲ **Taylor & Gaskin, Inc.**, 2201 Park Ave., Detroit, Mich. CA Est. $4,000,000. 1 story, structural steel Ford Assembly PLANT, CHICAGO, ILL. Ford Motor Co., P. O. Box 117, Dearborn, Mich. Bids Oct. 12. CD 10/1.

▲ **Jenkins & Boller**, 545 Benny St., Waukegan, Ill., CA $1,250,400 (a) Little Fort SCHOOL, Blanchard Rd. (b) Greenwood SCHOOL addn., North Ave. (c) Hyde Park SCHOOL addn., 1525 Hyde Park Ave. (d) Glenwood SCHOOL, Northmoor Ave. (e) Oakdale SCHOOL, McAree Rd., WAUKEGAN, ILL. School Dist. No. 61, 574 McAllister Ave., Waukegan, Ill. Bids Oct. 1. CD 9/12.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Colo., Camp Carson**—HOUSING—BA 12/21—U. S. Eng., 1709 Jackson St., Omaha, Neb. construct and finance permanent family housing, Inv. 25-066-57-9. CD 8/28, under LB.

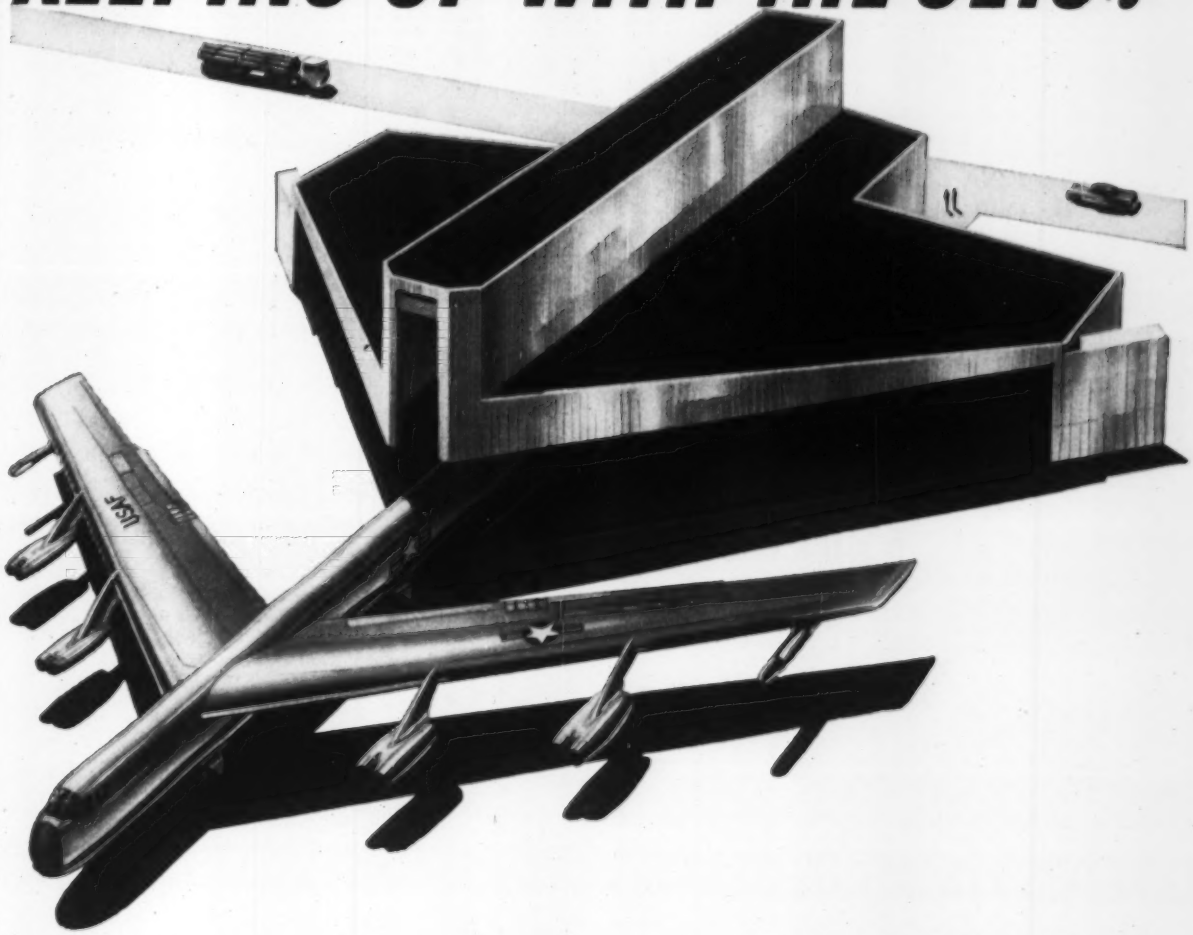
HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,
McLean-Astleford Co., Inc., 7701 Harriet Ave., Minneapolis, Minn., CA $605,130, grav. base, c. conc. pavement and bridge 0.5 mi. St. Louis Park and Golden Valley, Hennepin Co. Bids Sept. 28. CD 10/4, under LB.

▲ **IOWA**—State Hy. Comn., Ames,
Iowa—**Cunningham-Reis Co.**, 440 Insurance Exchange Bldg., Des Moines, Iowa. LB $180,311. bridges, culverts UG 856 (4) Montgomery Co.;
Iowa—**Iowa Bridge Co.**, 5770 2 St., Des Moines, Iowa, LB $171,156. bridges, culverts, IN-ING-853 (2) Polk Co.;
Iowa—**The Gould Constr. Co.**, 507 Security Bldg., Davenport, Iowa. LB $90,432. bridges, culverts U-831 (4), Scott Co.;

(Continued on page 90)

KEEPING UP WITH THE JETS!



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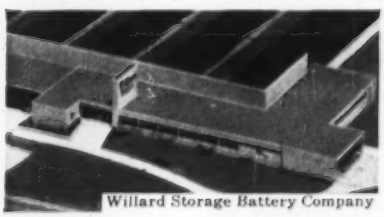

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- Water supply ..... Water Resources Authority, Puerto Rico
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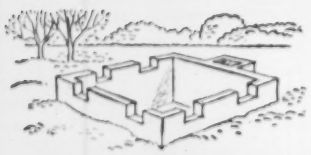

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(Continued from page 88)

Iowa—C. F. Lytle Co., 250 Insurance Exchange Bldg., Sioux City, Iowa. LB $1,374,892. bridges, culverts, I-52 IN-886 (7), Woodbury Co.;

Iowa—Pittsburgh Des Moines Steel Co., 1015 Tuttle St., Des Moines, Iowa. LB $92,501. structural steel and steel bearing piling for bridges FG-568 (2), Hardin Co.; LB $375,422, structural steel and steel bearing pilings for bridges IN-ING 853 (2) Group 2, Polk Co.; LB $164,599. structural steel and steel bearing piles for bridges, IN-ING 853 (2), Group 9, Polk Co.;

Iowa—Rock Island Bridge & Iron Works, Inc., 1630 Mill St., Rock Island, Ill. LB $106,032. bridges, culverts U 1052 (1) Group 1, Johnson Co.;

Iowa—Des Moines Steel Co., 421 S.W. 4 St., Des Moines, Iowa. LB $91,224. structural steel and steel bearing piles for bridges IN-ING-853 (2), Group 5, Polk Co.; LB $117,844, structural steel and steel bearing piling for bridges, IN-ING-853 (2) Group 7, Polk Co.;

Iowa—Allied Structural Steel Co., Clinton Bridge Corp. Div., Clinton; Iowa. LB $201,863. structural steel and steel bearing pilings for bridges UG-831 (5) Group 1, Scott Co. Bids Oct. 30. CD 10/18.

▲ IOWA—State Hy. Comn., Ames,

Iowa—Stade Constr. Co., Fairmont, Minn. LB $359,766. c. conc. pavement wid'n., b. conc. resurf. 2.0945 mi. UN-922, Clinton Co.;

Iowa—R. B. Burch, Inc., 249 33 St. Dr. S.E., Cedar Rapids, Iowa. LB $846,745. c. conc. pavement wid'n., b. conc. resurf. 5.727 mi. F-1052 (2) Johnson Co.;

Iowa—Holland Bros. Constr. Co., Inc., Decorah, Iowa. LB $110,061. c. conc. pavement wid'n., b. conc. resurf. 5.302 mi. S 1213 (3), Allamakee Co.;

Iowa—Mott Constr. Co., Centerville, Iowa. LB $75,863. grading 4.849 mi. Special F-1058 (1) Marshall Co.;

Iowa—E. M. Duesenberg, Inc., Clear Lake, Iowa. LB $550,985. grading 4.138 mi. IN-ING-853 (2), Polk Co.; LB $116,936, grading 0.666 mi. FN-217; LB $447,204, grading 2.296 mi. U 831 (4); LB $146,631, grading 0.299 mi. UG 831 (5), all foregoing Scott Co. Bids Oct. 30. CD 10/18.

TEXAS—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin,

Eckert-Fair Constr. Co., 1307 National City Bank Bldg., Dallas, Tex., CA $977,659. Service Area-North; Service Area-South, operation bldg., maintenance bldg. D-FW-64, Dallas-Fort Worth. Bids Oct. 23. CD 10/31, under LB.

▲ Michigan Sewer Constr. Co., Box 4753, Detroit 19, Mich., CA, $3,449,215. Vasquez Tunnel and Jones Pass Tunnel lining, Winter Park (Fraser) Clear Creek and Grand Counties, DENVER, COLO. Bd. Water Comrs., City & County Bldg., Denver, Colo. Bids Oct. 26. CD 10/31, under LB.

▲† Robert E. McKee, General Constrator, Inc., Box 562, El Paso, Tex., LB $1,189,990, track control and maintenance facilities, Holoman Air Force Base. ENG-29-005-57-33, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Oct. 23. CD 9/20.

BUILDINGS—LB & CA

O. E. Madsen, Sexton Bldg., Minneapolis, Minn., LB $832,200 (10 bidders) HIGH SCHOOL, east of Belt Line, south of Glenwood Ave., etc., GOLDEN VALLEY (P.O. Minneapolis), MINN. Bd. Educ., Independent School Dist. 89, Grace Seed, clk., Golden Valley, Minn. Bids Oct. 30. CD 10/24.

▲ The Fluor Corp., Ltd., 2500 Atlantic St., Los Angeles, Calif., CA Total est. $25,000,000. design and construct 80,000 bbl. per day VACUUM PIPE STILL at refinery, PORT ARTHUR, TEX. The Texas Co., 135 E. 42 St., New York, N. Y. CD 10/29.

FAR WEST

BUILDINGS—SLC

▲ Wash., Tacoma—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, soon lets contract construct and finance 110-to 150-units of family housing, McChord Air Force Base, Inv. 57-30, $1,500,000. CD 10/5, under LB.

HEAVY CONSTRUCTION—LB & CA

† IDAHO—Bureau P. Rds., Dpt. Commerce, Boise,

MacGregor-Triangle Constr. Co., 200 Sunrise Rim, Boise, Idaho, CA $711,695. Proj. 476-A, grading, constr. bridge over Clearwater River on 6.9 mi. Clearwater River Rd., Clearwater Co. Bids Oct. 19. CD 10/25, under LB.

† OREGON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland,

Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, CA. $644,640 (5 bidders) 2.244 mi. Mt. Hood Hy. Clackamas Co. Bids Oct. 26. CD 10/17.

▲ CALIFORNIA—State Div. Hys., 1120 N St., Sacramento,

Calif.—Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., LB $5,180,910. c. conc. paving 5.4 mi. on cement treated subgrade, rein.-con. slab bridge on Hy. 40 Nevada and Sierra Counties;

Calif.—John Delphia & Fred J. Early, P. O. Box 607, Patterson, Calif., LB $970,629 (8 bidders) 4-lane divided hy. 3.7 mi. U.S. 50, rein.-con. bridge at Snow Road Undercrossing, El Dorado Co. Bids Oct. 31. CD 10/4.

BUILDINGS—LB & CA

Myers Bros., Brumonet & Demblon, Inc., 3407 San Fernando Rd., Los Angeles, Calif. CA $700,000. 2 story, 84,000 sq. ft., FACTORY, 3360 Foothill Blvd., ALTADENA, CALIF. Stuart Mfg. Co., 3407 San Fernando Rd., Los Angeles, Calif.

R. A. Watt Constr. Co., 7862 S. Western Ave., Los Angeles, Calif., CA, $652,500. 75 stucco DWELLINGS.

(Continued on page 92)

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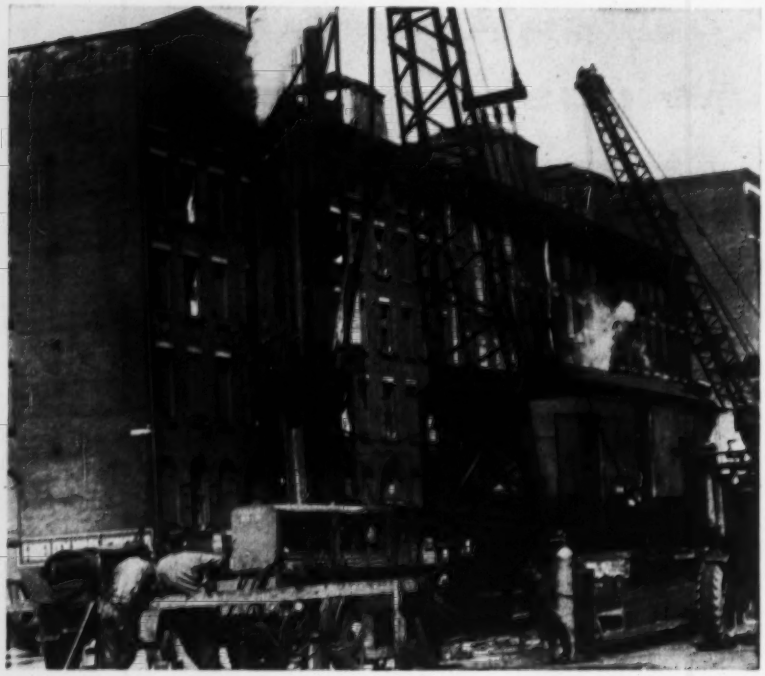

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(Continued from page 90)

Lots 1 thru 75, Tract 21757, COMPTON, CALIF. Inglewood Lane Co., 7862 S. Western Ave., Los Angeles, Calif.

Carl O. Larsen, 1246 S. Main St., Santa Ana, Calif., CA $712,160. Proj. 20, reinforced brick Intermediate SCHOOL, GARDEN GROVE, CALIF. Garden Grove School Dist., Garden Grove, Calif. Bids Sept. 21. CD 9/28, under LB.

McDonald Bros., 2639 S. La Cienega Blvd., Los Angeles, Calif., CA, $928,310. East Valley District HEADQUARTERS, 12730 Saticoy St., LOS ANGELES, CALIF. Dpt. Water & Power, 311 S. Spring St., Los Angeles, Calif. Bids Sept. 28, awarded Oct. 22. CD 10/10, under LB.

Steed Brothers, 714 Date Ave., Alhambra, Calif., LB $821,000 (4 bidders) Duarte HIGH SCHOOL addn. Proj. No. 1, MONROVIA, CALIF. Monrovia-Duarte Union High School Dist. Colorado and Madison Sts., Monrovia, Calif. Bids Oct. 24.

▲ **South Coast Constr. Co.**, 230 30 St., Newport Beach, Calif., CA $1,113,465. 55 DWELLINGS, Highlands Drive, Tract 3057, NEWPORT BEACH, CALIF. Bay-Way Homes, Inc. & Island Estates, 230 30 St., Newport Beach, Calif.

▲ **Bollenbacher & Kelton**, 3245 Zion St., San Diego, Calif., Owner Builds, $1,309,700. 127 stucco DWELLINGS, Allied Gardens No. 10, SAN DIEGO, CALIF.

▲ **John H. Deeter**, 1230 17 St., Bakersfield, Calif., LB $1,147,000, est. $1,000,000 (6 bidders) Cuyama Valley HIGH SCHOOL, SANTA MARIA, CALIF. Santa Maria Union High School Dist., Santa Maria, Calif. Bids Oct. 25. CD 10/9.

▲ **C. L. Peck & Millie and Severson** 816 W. 5 St., Los Angeles, Calif., CA $2,449,000. new municipal AUDITORIUM, SANTA MONICA, CALIF. City, City Hall, Santa Monica, Calif. Bids Oct. 23, awarded Oct. 26. CD 9/13.

CANADA

BUILDINGS—BA

▲ **Ont., Windsor**—HOUSING—BA 11/20—H. I. Stricker, regional engr., c/o Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto, 96 single family dwellings, $1,000,000. Plans deposit $100.

Ont., Ottawa—ADMINISTRATION—BA 11/22—Dpt. P. Wks., Hunter Bldg., admin. bldg. for Dpt. Mines & Technical Surveys, Booth St. $400,000. Allward & Gouinlock, 57 Bloor St. W., Toronto, archts. R. P. Allsop & Assoc., Ltd. 290 Davenport Rd., Toronto, consult. engrs. CD 2/3.

N. S., Halifax—ABATTOIR—BA 11/29—N. S. Co-Operative Abattoir Ltd., c/o Leslie R. Fairn & Assoc., archts. 41 Argyle St., Abattoir bldg., Bedford Basin, Halifax area, $600,000. Plans deposit $200. CD 1/23.

BUILDINGS—SLC

▲ **Ont., Simcoe**—PLANT—Canada Wire & Cable Co. Ltd., 147 Laird Dr., Leaside, Toronto, soon lets contract 1 story, 113,000 sq. ft., steel, brick enamel wire dept. plant. $2,000,000. Babcock Scrivener Ltd., 119 Isabella St., Toronto, engrs. CD 7/17.

BUILDINGS—LB & CA

Burns & Dutton Concrete & Constr. Co. Ltd., 9004 125 Ave., Edmonton, Alta., LB $668,885 (4 bidders) PHYSICAL TRAINING BLDG., Army Barracks, EDMONTON, ALTA. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont.

Newton Construction Co. Ltd., P. O. Box 970, Sherbrooke, Que., LB $786,300 (6 bidders) detention BARRACKS and 3 gate houses, Camp Gagetown, FREDERICTON, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont.

Richard & B. A. Ryan Ltd., 78 Logan Ave., Toronto, Ont., LB $700,000. 51,000 sq. ft. COLD STORAGE, 16,800 sq. ft. dry storage surface area, loading docks, etc. and 6,800 sq. ft. office area, LANCASTER, N. B. Ayr Cold Storage Maritimes Ltd., c/o D. S. Wood, Admiral Beatty Hotel, St. John, N. B. Bids Oct. 22. CD 10/10.

▲ **Foundation Co. of Ontario Ltd.**, 1220 Bay St., Toronto, Ont., CA Over $1,000,000. 200x200 ft., steel frame 20,000 kw power NUCLEAR POWER PLANT, CHALK RIVER, ONT. Atomic Energy of Canada Ltd., Green Island, Ottawa, Ont., Ontario Hydro-Electric Power Comm., 620 University Ave., Toronto, Ont., and Canadian General Electric Co. Ltd., 212 King St. W. Toronto, Ont. Awarded Oct. 23.

I. Frydman, 345 Lonsdale Ave., Toronto, Ont., Owner Builds. $624,000. 11 story, rein.-con. brick APARTMENT, Bernard Ave. and St. George St., TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt.

Taylor Woodrow (Canada) Ltd., 636 Jarvis St. Toronto, Ont., CA, Est. $600,000. (7 bidders) 4 story, bsmnt., L-shaped, masonry, concrete, steel, RESIDENCE, TORONTO, ONT. Young Women's Christian Assn. 21 McGill St., Toronto, Ont. Bids Oct. 18, awarded Oct. 24. CD 10/5.

▲ **Pentagon Constr. Co. Ltd.**, 5005 Namur St., Montreal, Que., CA $2,401,098, GRAIN ELEVATOR imprvs., Montreal Harbor, MONTREAL, QUE. National Harbor Bd., West Block, Parliament Bldgs., Ottawa, Ont. C. D. Howe Co. Ltd., 1421 Atwater Ave., Montreal, Que., consult. engr.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **American Cast Iron Pipe Co.**, 2930 N. 16 St. Birmingham, Ala., U. S. A. CA $1,355,928, water sys. ASUNCION, PARAGUAY. Corposana, Asuncion, Paraguay. Grand total $3,154,238. Bids Oct. 1. CD 7/12.

(Continued on page 94)

The addition is approximately 91 ft. x 114 ft. with 16 ft. x 30 ft. bays. Prestressed beams run the 114 ft. length, spanning 16 ft. over the precast columns. Prestressed channel slabs of 12 in. depth span the 30 feet between the beams at floors and roof.

Owner: MINNESOTA RUBBER and GASKET CO., St. Louis Park, Minn.
Architect: MAGNEY, TUSLER & SETTER Minneapolis, Minn.
Precast concrete manufactured and erected by: PRE-STRESSED CONCRETE, INC., St. Paul, Minn.

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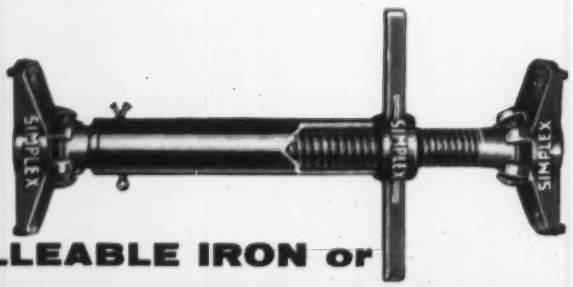
- LEHIGH MORTAR CEMENT
- LEHIGH AIR-ENTRAINING CEMENT

Interior view of Prestressed Concrete's casting plant. Four channel beds at left are 200 ft. long. In center is bed for precasting reinforced beams. Next to the far right is a 100 ft. bed for prestressing beams. At far right is a form for precasting columns.

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.



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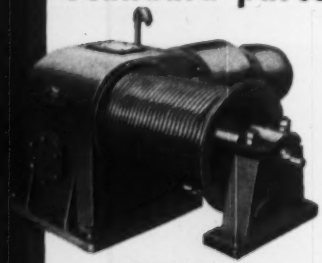

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Milwaukee and Twin Cities Denver New Orleans

(Continued from page 92)

Kaiser Engineers, Div. of Henry J. Kaiser Co., 1924 Broadway, Oakland 12, Calif., U. S. A. CA **$1,325,000,** general constr. water sys. (Asuncion, Paraguay);

Allis Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., U. S. A., CA **$201,550,** centrifical pumps (Asuncion, Paraguay);

Westinghouse Electric Corp., 40 Wall St., New York, N. Y., U. S. A. CA **$101,345,** motor controls (Asuncion, Paraguay);

C. Tennant & Sons Co. of N. Y., 100 Park Ave., New York, N. Y., U. S. A. CA **$170,415,** galvanized steel pipe (Asuncion, Paraguay).

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Saconia & Early Constr. Co.,** Madrid, Spain, LB $5,589,274 (3 bidders) POL terminal storage, SEVILLE, MADRID, ZARGOZA, SPAIN. Bureau Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., U. S. A.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Carlsbad**—Carlsbad Municipal Water Distr., Carlsbad, voted **$1,300,000** bonds Oct. 6, 2,500,000 gal. regulating water reservoir and 15 mi. water transmission line from the San Diego Aqueduct to Carlsbad.

▲ **Mich., Detroit**—City, Bd. Water Comrs., 735 Randolph, 4 mi. water main from Detroit north to Madison Heights, Dequindre from 8-mile to 12-mile, **$1,200,000.** G. Remus, c/o Water Dpt., 735 Randolph, ch. engr. CD 11/11/48.

▲ **Okla., Lawton**—City, defeated bonds Oct. 30, addnl. water supply, **$6,182,840.** Wyatt B. Hendrick, Security Bank Bldg., consult. engr. CD 10/23.

SEWERS, WASTE DISPOSAL

▲ **Fla., Clearwater**—Bd. Comrs., Pinellas Co. Court House Annex, sanitary sewerage sys. and treatment facilities. **$6,750,000.** Briley, Wild & Assocs., P.O. Box 3052, Daytona Beach, and Dr. A. P. Black, Black & Associates, Gainesville, engrs. CD 10/24.

▲ **Idaho, Pocatello**—City, City Hall, sewage treatment plant. **$1,000,000.** Work may start late next year. Hamilton & Voeller, 417 E. Center St., Pocatello, consult. engrs. CD 4/12.

▲ **Mich., Detroit**—City, Glenn C. Richards, comr. P. Wks., City-County Bldg., West End Relief Sewer, River of Dix, $3,140,000; Oakland Pump Stations, $185,000, Connor Creek Control Station $825,000, Ashland Diversion $210,000, 1957-58 projects; Mack Relief Sewer $3,460,000, Blue Hill Pump Station $115,000, Rivard Relief Sewer $2,700,000, 1961-62 projects. M. F. Wagnitz, 528 City-County Bldg., engr.

▲ **Minn., St. Louis Park**—City, J. Justad, clk., sanitary and storm sewer projects in north side of city. **$2,000,000.** G. M. Ore Eng. Co., 1004 Marquette Ave., Minneapolis, consult. engrs. CD 8/2/54.

▲ **O., Hamilton**—City, City Hall, sewage disposal plant, Riley's Island. **$3,208,000.** Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago 11, Ill., engrs. CD 10/26.

▲ **Tenn., Athens**—City, City Hall, installing city wide sewerage sys. **$3,340,000.** CD 6/9/54.

BRIDGES

▲ **Ill., Chicago**—City, City Hall, underpass, N. Western Ave. to Logan Blvd. **$2,500,000.** CD 4/9/55.

▲ **Okla., Oklahoma City**—City, City Hall, bond election Nov. 27, bridges, **$2,000,000.** W. W. Baker, city engr. CD 3/27.

STREETS AND ROADS

▲ **OHIO**—State Hy. Dpt., Columbus,

Butler and Warren Counties—North-South Freeway from Tylersvile Rd. in Butler Co. to Rte. 123, Warren Co. **$11,500,000.** Bids in 1957 or early 1958. Dodson, Kinney & Lindblom, 5 E. Long St., Columbus, and A. M. Kinney, Inc., 2905 Vernon Pl., Cincinnati, consult. engrs.

Hamilton and Butler Counties—North-South Freeway from Rte. 50 bypass to Tylersville Rd. in Butler Co. **$9,000,000.** Bids late 1957 or early 1958. Vogt, Ivers, Seaman & Assocs., 34 W. 6 St., Cincinnati, consult. engrs.

Warren Co.—North-South Freeway from Rte. 123 to Rte. 25, south of Dayton, **$10,800,000.** Bids 1957 or early 1958. Yule, Strickland, Jordan & McNee, 309 S. Broad St., Phila., Pa., consult. engrs.

▲ **Okla., Oklahoma City**—City, City Hall, bond election Nov. 27, streets. **$4,000,000.** W. W. Baker, city engr. CD 3/27.

▲ **UTAH**—State Road Comn., State Capitol, Salt Lake City,

Kane Co.—Contr. 1, Kanab, Glen Canyon Dam Site Rd., incl. 21 mi. of road from Arizona line toward Kanab. **$1,600,000.** Bids sometime this year.

▲ **WYOMING**—State Hy. Comn., Cheyenne,

Natrona Co.—relocating U. S. Hys. 20, 26 and 87 relocation, incl. bridge over North Platte River. **$10,000,000-$20,000,000.**

EARTHWORK, WATERWAYS

▲† **California**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Trinity Dam,

(Continued on page 96)

FIRE RESISTANCE

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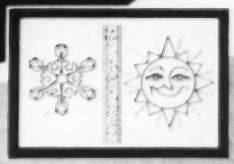

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(Continued from page 94)

Trinity River Division, Central Valley Proj., inasmuch as weather conditions at the time of issuance may make examination of site of proposed work difficult, prospective bidders are invited to inspect the site in the immediate future. Bids may be issued in December. L. N. McClellan, asst. comr. and ch. engr. CD 4/14/44.

▲ **Calif., San Jose**—Santa Clara County Flood Control Dist., 60 N. 2 St., voted $5,000,000 bonds Oct. 2, new creek channels and imprv. old ones to aid runoff, Northwest Zone. CD 8/17.

▲ **Pa., Erie**—City, City Hall, dredging, land reclamation and wharf and storage facilities for expanding harbor. $2,712,500.

▲ **Que., Jonquiere**—Villa de Jonquiere, Town Hall, hydro electric power station, Riviere Pibrac, $1,500,000-$2,000,000.

AIRPORTS

▲ **N. Y., Mitchel Field**—TECHNICAL BLDG.—U. S. Eng., 111 E. 16 St., New York, Zone 3, plans by LaPierre, Litchfield Partners, 292 Madison Ave., New York, Zone 17, technical training bldg. $1,000,000-$3,000,000.

▲† **N. Y., Niagara Falls**—RUNWAY PAVING, etc.—U. S. Eng., 111 E. 16 St., New York, Zone 3, runway paving, $1,000,000-$3,000,000; theater, $100,000-$500,000, Niagara Falls Air Force Base. Thomas H. McKaig, 881 Main St., Buffalo, consult. engr. CD 10/20/55.

▲† **N. Y., Westhampton**—AIRPORT IMPRVS.—U. S. Eng., 111 E. 16 St., New York, Zone 3, electric distr. sys., $100,000; readiness crew bldg., $100,000-$500,000; runway paving, $500,000-$1,000,000, Suffolk Air Force Base. Gehron, Weiskopf & Pickworth, 101 Park Ave., New York, Zone 17, engrs. CD 8/22.

▲ **Okla., Oklahoma City**—AIRPORT—City, City Hall, bond election Nov. 27, airport extens. $4,300,000. W. W. Baker, city engr. CD 3/27.

LATIN AMERICA

▲ **Uruguay**—HYDRO ELECTRIC PLANT—Administration General de las Usinas Electricas y los Telefonos del Estado del Esrado, Montevideo, plans hydro electric plant and transmission lines at Rincon de Baygorria, on Rio Negro. $25,500,000.

PUBLIC BUILDINGS

▲ **Calif., Glendora**—SCHOOL—Glendora School Dist., 440 W. Foothill Blvd., voted $1,000,000 bonds, school. CD 9/20.

▲ **Calif., Lynwood**—SCHOOLS—Lynwood Unified School Dist., Lynwood, defeated bonds Oct. 16, high school, $1,370,000, elementary school $935,000. CD 7/13.

▲ **Calif., Orinda**—SCHOOLS—Orinda Union Elementary School Dist., Orinda, bond election Jan. 22, 1957, school expansion program, $2,150,000.

▲ **Calif., Redlands**—SCHOOLS—Redlands Union High School Dist., Redlands, bond election Nov. 12, Yucaipa Junior and Senior High Schools addns., Cope Junior High School and new Junior High School, $4,290,000. CD 2/7.

▲ **Colo., Greeley**—SCHOOL—School Dist. No. 6, 811 15th St., Greeley High School addn., 35,860 sq. ft. and new elementary school between Hillside and Brentwood addns.; 30,000 sq. ft., $1,328,000. Alfred Watts Grant, 1640 Court Place, Denver, consul. engrs.-archts. CD 9/26.

▲ **Conn., Enfield**—BUILDINGS—State P. Wks. Dpt., 165 Capitol Ave., Hartford, bldgs. at Osborne Prison Farm to replace existing barrack type bldgs. $1,000,000. CD 8/10/54.

▲ **Conn., Milford**—SCHOOL—Town, Town Hall, West High School, Milford Point Rd. $1,300,000.

▲ **Conn., Ridgefield**—SCHOOL—Town, Town Hall, 12 room elementary school North End, 8 room addn. to Veterans Park School, Ridgebury and Branchville, modernize East Ridge Bldg. for High School, $2,000,000.

▲ **Conn., Storrs**—SCIENCE, etc.—State P. Wks. Dpt., 165 Capitol Ave., Hartford, science bldg. $3,000,000; dormitory to accomodate 500 women, $1,200,000; dormitory to accomodate 500 men, $1,200,000; addnl. classroom facilities, $3,000,000; continuing education center, $2,400,000; intramural and athletic sports arena, $990,000; housing for faculty, $1,200,000, East-Side stands in football stadium, $390,000; educational television station, $80,000, University of Connecticut.

▲ **Ill., Chicago**—HOSPITAL, etc.—University of Illinois, 256 Administration Bldg., Urbana, plans by Pace Assocs., 53 W. Jackson Blvd., and Fugard, Burt, Wilkinson & Orth, 520 N. Michigan St. (A) research hospital addn. (B) dentistry, medicine, pharmacy bldg. addns., Wood and Harrison Sts. $3,840,000. CD 3/18/53; plans by Skidmore, Owings & Merrill, 100 W. Monroe St., research laboratory, vicinity Wood and Harison St. $1,925,000. CD 3/18/53.

▲ **Iowa, Iowa City**—SCHOOL—Iowa City Public Schools, Buford W. Garner, supt. Schools, $1,500,000 bond election Nov. 20, Junior High School. Louis Kingscott & Assoc., 605 Putnam Bldg., Davenport, archt. CD 10/24.

▲ **Iowa, Waterloo**—COUNTY, CITY—City, City Hall, and Black Hawk Co., County Bldg., Waterloo, plans by Black Hawk Architects, Inc., Waterloo, joint city-county bldg. $2,265,000. CD 8/23.

▲ **La., New Orleans**—SCHOOLS—Orleans Parish School Bd., 703 Carondelet St., plans by Ricciuti & Assn., 521 Royal St., Junior High School, on site bounded by Second, S. Tonti, Fourth and S. Rocheblave Sts., $1,552,320; plans by Carl L. Olschner & Assn., Pere Marquette Bldg., elementary school on site bounded by Clio, S. Dorgenois, Erato, and S. Broad Sts., $402,380.

▲ **Mass., Marshfield**—SCHOOL—Town, Supt. Schools, New St. plans by Halderman & Jacoby, 153 Main St., Brockton, high school. Plain and Forest Sts. $1,300,000. CD 10/13/55.

▲ **Minn., Roseville** (P. O. St. Paul)—SCHOOL—Bd. Educ., 1261 Hy. 36, St. Paul, voted $2,300,000 bonds Oct. 23, school constr., incl. Junior High School, $500,000; Brimhall Elementary School addn., $500,000; addns. to 3 smaller schools, each under $200,000, Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, archts. CD 2/14/55.

▲ **N. J., Newark**—GARAGE—City, Parking Auth., City Hall, 3 level parking garage under Military Park, $2,000,000.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, plans by John A. Thompson, 111 E. 40 St., New York, Zone 17, 3 story, P.S. 11 (formerly P.S. 295), 419 Waverly Ave., Proj. E-387, $2,000,000.

▲ **N. Y., New York**—SCHOOL—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, plans by Dominick Salvati & Son, 26 Court St., Brooklyn, Zone 2, P.S. 179 Amsterdam Ave. and West 101 St., Proj. E-816. $1,000,000.

▲ **Tex., Brownsville**—POWER PLANT—City, defeated bonds Oct. 13, power plant, $3,150,000 (Correction status of bond election). CD 10/25.

▲ **Tex., Lubbock**—SCHOOL—Lubbock Independent School Dist., plans by Herbert M. Brasher & Assoc., 412 Ave. M, Junior High School, 31st St. and Quaker Ave., $1,000,000. CD 10/27/55.

▲ **Tex., Marshall**—COURTHOUSE—Harrison Co., c/o Courthouse, Longview, new courthouse. $1,000,000.

▲† **Tex., San Antonio**—LABORATORY—U. S. Engr., Box 1229, Galveston, medical laboratory, $3,500,000; classrooms bldg., $3,500,000; administration bldg., $1,500,000, at Brooks Army Medical Center, Fort Sam Houston. Wyatt C. Hedrick, 5201 Fannin St., Houston, consult. engr. CD 4/30/52.

▲ **Utah, Salt Lake City**—HIGH SCHOOL—Salt Lake City Bd. Educ., 440 E. First South, Salt Lake City, plans by Lowell E. Parrish, 325 Dooly Bldg., Southeast Junior High School, 18th East and 14th South, $1,350,000. CD 5/2.

▲ **Va., Norfolk**—SCHOOLS—Norfolk City School Bd., Bank and Charlotte Sts., administration bldg., teaching materials center, Broad Creek Village Sect., $500,000; elementary school, Tanners Creek, $650,000, 1958 project; Junior High School, Berkley sect., $1,000,000, 1959 project; elementary school, northern

(Continued on page 99)

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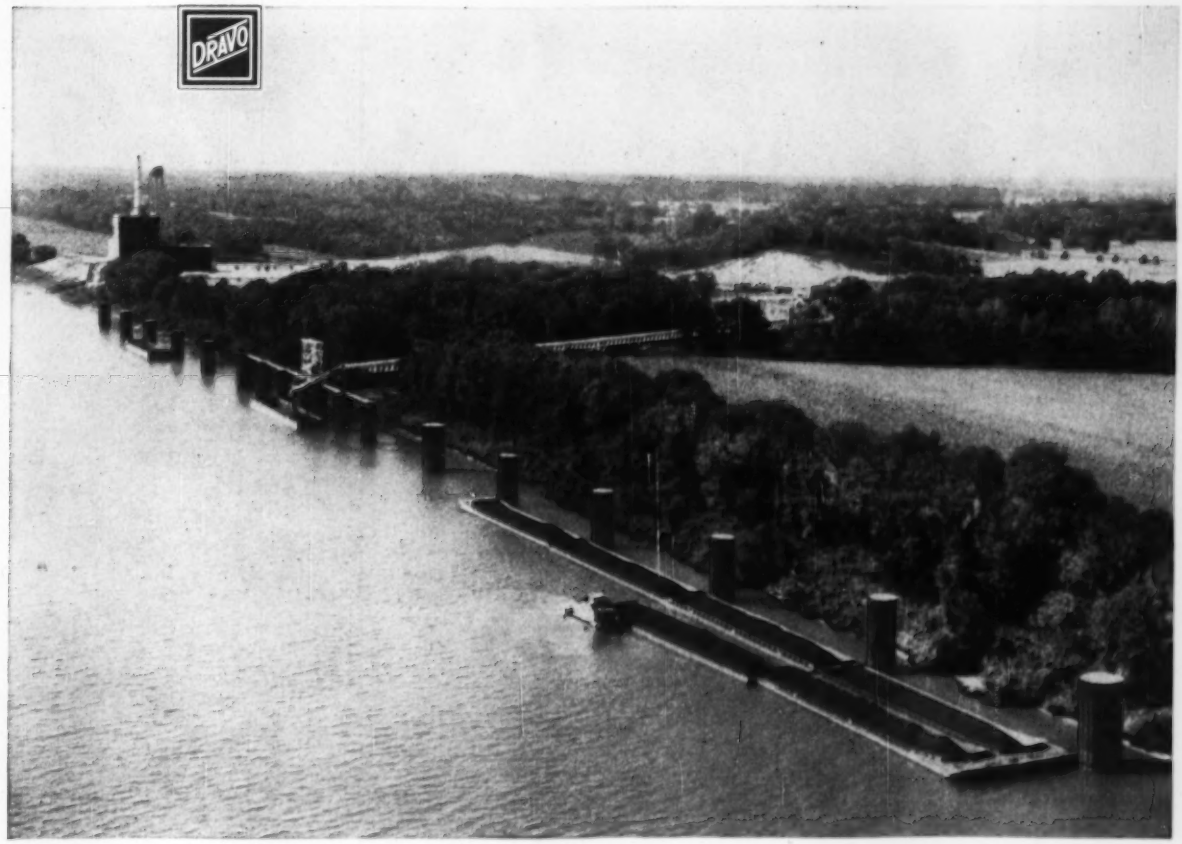

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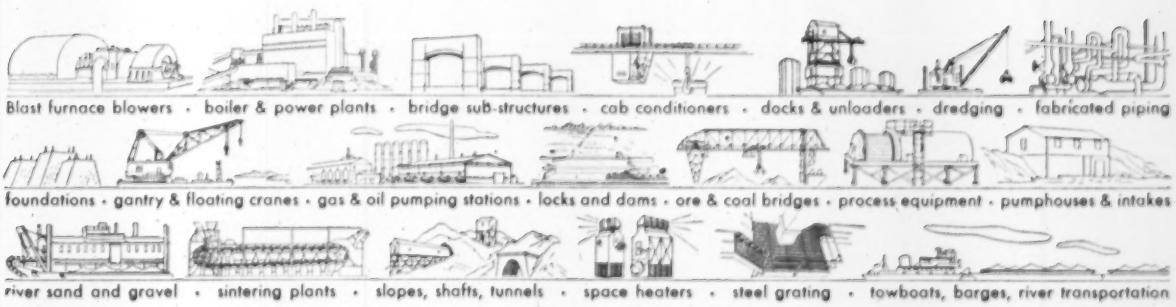

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Fruehauf industrial trailers utilizing Yoloy "E" in their construction are: (above) three-compartment, 6300-gallon gasoline transport, and (right) 5000-gallon, 2-inch insulated hot asphalt hauler.

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In the two Fruehauf trailers (shown above) for transporting gasoline and asphalt, Yoloy "E" high strength low alloy steel is used to insure structural strength, decrease dead weight and increase payload capacity. Trailer components such as side sheets, top ribs, baffles, bulkheads, stiffeners, inner tanks and outer shells are all fabricated from Yoloy "E". The corrosion resistance of Yoloy "E" gives Fruehauf equipment a much longer service life—which helps build customer profits and satisfaction.

Yoloy is available in sheets, plates, strip, bars, shapes, cold-drawn bars and tubular products—including both seamless and continuous weld pipe. Your nearest Youngstown District Sales Office is ready to supply information and service engineering on the Yoloy Steels best fitted to meet your industrial requirements.

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(Continued from page 96)

or eastern section of city, $650,000, 1959 project; high school, northeastern section $2,000,000, 1960 project; elementary school, location undetermined, $650,000, 1960 project; elementary school, location undetermined, $650,000, 1961 project; plans by A. Ray Pentecost, Jr., & J. B. Courtney, Colonial Ave. at 21st St., Junior High School, Tanners Creek area (Lakewood), $1,500,000, 1958 project; plans by Louis A. Oliver & H. L. Smith, 3rd, 409 Yarmouth St., Junior High School, northeastern section (Lansdale), $1,500,000, 1961 project. W. P. Sullivan, c/o Norfolk School Bd., engr.

▲ **B. C., Vancouver**—SCHOOL—Vancouver School Bldg., 1595 W. 10 St.; plans by E. D. King, 1595 W. 10 St.,4 story, rein.-con. composite Junior-Senior High School, Prince Edward and 23 Sts. $2,000,000. CD 12/18/53.

▲ **Ont., Hamilton**—NUCLEAR RESEARCH REACTOR—Atomic Energy of Canada Ltd., Ottawa, The Hydro-Electric Power Comn. of Ontario, 620 University Ave., Toronto, Hamilton College of McMaster University, Hamilton, nuclear research reactor for university and industrial research. $1,300,000.

▲ **Que., Montreal**—TECHNICAL SCHOOL—Provincial Government, Dpt. Youth & Social Welfare, Que., technical school Domaine St. Sulpice, $2,000,000.

COMMERCIAL BUILDINGS

▲ **Calif., Corte Madera**—STORES—Madera Gardens Development Co., c/o John S. Boles, archt., 215 Leidendorf St., San Francisco, 1 and 2 story stores, concrete, Madera Shopping Center, $2,000,000.

▲ **Calif., Los Angeles**—APARTMENT—Paul Trousdale & Clinton Murchison, Jr., c/o Pereira & Luckman, archts., 9220 Sunset Blvd., 22 story Beverly Towers Apartment, Sunset Blvd. $10,000,000.

▲ **Calif., Palo Alto**—INN—John Rickey, 4219 El Camino Real, Palo Alto, 6 story rein.-con. addn. to Rickey's Studio Inn, patio for each room. $1,000,000.

▲ **Calif., San Mateo**—SHOPPING CENTER—Irving Feldman, c/o Murphy & Hastings, engrs., 650 El Camino Real, Redwood City, shopping center in Baywood Plaza Sub-division. $1,000,000.

▲ **Calif., Sausalito**—MOTEL—Grace Management Corp. & U. S. Leasing Corp., 465 Calif. St., San Francisco, motel and swimming pool on berthing facilities on Land Spit Property, $3,000,000.

▲ **Colo., Loveland**—HOTEL, etc.—Loveland Hotel Co., (John D. & Clint Murchison Jr., Dallas, Tex.) plans by Ralph D. Peterson, archt.-engr., 1707 Gilpin St., Denver, 125 room hotel, country club and convention headquarters on the North shore of Lake Loveland, $1,000,000. CD 2/15.

▲ **Conn., Ellington**—HOUSES—Sidney Moses, 464 Farmington Ave., Hartford, 80 houses development, Crane Acres, Crane Rd. $1,116,000.

▲ **Conn., New Haven**—DORMITORY—Yale University, 105 Wall St., New Haven, plans by Douglas Orr, 111 Whitney Ave., New Haven, women students dormitory, Temple St. $1,000,000. CD 6/26.

▲ **Conn., West Hartford**—HOUSES—Hunter Park, Fernbel Lane, 57 houses development, Hunter Park, West Side. $1,285,350.

▲ **Idaho, Boise**—CHURCH—First Methodist Church, 1012 State St., plans by H. E. Wagoner, Archts. Bldg., Phila., Pa., and Hummel, Hummel & Jones, 1324 Idaho St., Boise, church bldg. $1,000,000. CD 10/21/55.

▲ **Mich., Garden City**—HOSPITAL—Peoples Community Hospital Auth., 35166 Mich. Ave., Wayne, bond election Nov. 6, hospital. $2,000,000.

▲ **Minn., Minneapolis**—BUILDING—First Federal Savings & Loan Assn., W. Youngquist, pres., 110 S. Seventh St., plans by Larson & McLaren, 1901 Foshay Tower, 6 story, 82x128 ft. building, Seventh St. and Marquette Ave. $1,500,000.

▲ **Mont., Great Falls**—SHOPPING CENTER—Tenth Avenue Realty Co., c/o archt., and William F. O'Haire, Shelby, plans by Frank Shanley, Barber-Lydiard Bldg., 73,295 sq. ft. brick and glass walls "Miracle Mile" Shopping Center. $2,000,000.

▲ **N. J., Morristown**—HOSPITAL—Bd. Trustees All Soul's Hospital, 95 Mt. Kemble Ave., plans by Fletcher & Thomas, 211 State St., Bridgeport, Conn., particularly Mr. Gerald Phelan of that firm with offices at 1051 Bloomfield Ave., Clifton, 6 story, brick, steel hospital. $3,000,000. CD 1/13/54.

▲ **N. J., Newark**—OFFICE—Mutual Benefit Life Ins. Co., 300 Broadway, plans by Frank Grad & Sons, 11 Commerce St., 6 story office bldg., Broad and Bridge Sts. $1,500,000.

▲ **N. Y., Brooklyn**—APARTMENT—Concord Leasing Corp., 97-27 64 Rd, Rego Park, plans by George G. Miller, 125 W. 45 St., 6 story apartment and 55-car garage, 2400 East 3rd St. $1,500,000.

▲ **N. Y., Brooklyn**—SHOPPING CENTER—Red Rudinger, 30-97 Steinway St., Long Island City, plans by Morris Brody, 560 Saddle Ridge Rd., Woodmere, 250,000 sq. ft. shopping center on east side of Flatbush Ave. and Ave. I. $5,000,000.

▲ **N. Y., Greenburgh**—SHOPPING CENTER—Glenel Realty Corp., c/o Henry G. Greeve, archt., 855 Sixth Ave., New York, Zone 1, shopping center, $1,000,000.

▲ **N. Y., Mount Kisco**—HOSPITAL—Northern Westchester Hospital, E. Main St., plans by Rogers & Butler, 219 E. 44 St., 2 story hospital addn. $1,000,000.

▲ **N. Y., Plattsburgh**—SHOPPING CENTER—North Country Shopping Center, c/o Jerome Lieberthal, Chrysler Bldg., New York, Zone 17, plans by Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse, Zone 3, shopping center, on 40 acre tract, on Rte 9. $3,000,000. Constr. within two months. (Correction-status). CD 10/1.

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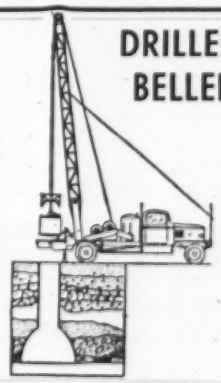

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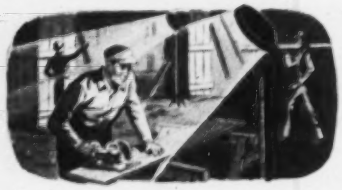

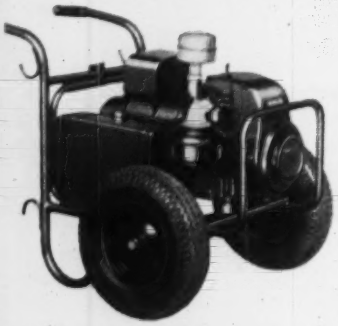

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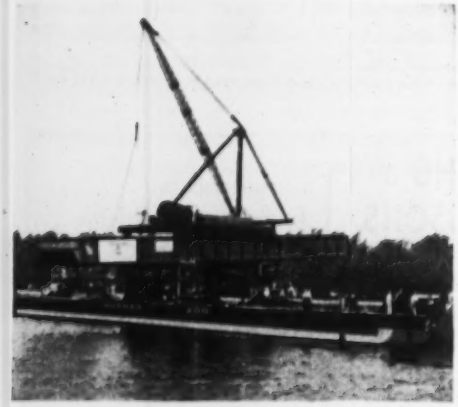

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▲ **Pa., Export**—LABORATORY—Mellon Institute, 4400 5 Ave, Pittsburgh, plans by Charles & Edward Stotz, 801 Bessmer Bldg., Pittsburgh, 2 story, bsmnt. radiation research laboratory. $1,000,000. 300 volt Va de Graaf accelerator awarded to High Voltage Eng. Corp., Cambridge, Mass.

▲ **Tenn., Memphis**—OFFICE—Kemmons Wilson, 4985 Summer Ave., 18 story office. $4,000,000.

▲ **Tex., Ft. Worth**—MEDICAL CENTER—Lonark Corps, c/o H. R. Clement, pres., 832 Monroe St., plans by Herbert Voelcker & Assoc., 1202 Dennis St., Houston, medical center and hospital masonry and glass, White-settlement Rd. and Boland, $7,500,000.

▲ **Tex., Houston**—SHOPPING CENTER—Fairmount Park Shopping Center, c/o Wm. G. Farrington, Developer, 1661 Tanglewood St., shopping center units. $10,000,000.

▲ **Tex., San Antonio**—HOUSING—Trinity University, 715 Stadium Dr., plans by Bartlett Cocke, O'Neil Ford, 3501 Broadway, housing facilities. $1,000,000. CD 7/22/53.

▲ **Wash., Puyallup**—SHOPPING CENTER—W. K. Fanning, Puyallup, will not construct shopping center on land west of Meridian and north of River Rd., $2,000,000. Project abandoned. CD 8/17.

▲ **Que., Montreal**—OFFICE—D. K. Besner Realties Regd., c/o Louis & Aspler, archts., 5165 Sherbrooke St. W., 10 story, 3 bsmnt. levels, 77x180 ft., rein.-con. office bldg. S.E. corner Mountain St. and proposed extension of Burnside Ave. $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Antioch**—PLANT—Crown-Zellerbach Corp., 343 Sansome St., San Francisco, Zone 9, tissue, towels, napkins and bags converting plant. $8,000,000.

▲ **Calif., Dominguez**—PLANT—Borden Co., 350 Madison Ave., New York, N. Y., pentaerythritol plant. $1,000,000.

▲ **Conn., Newtown**—FACTORY—F. W. French Tube Co., 91 Walnut St., Watertown, 70x600 ft. factory for production of television tubes with railroad siding, Rt. 25, $1,500,000. (Correction—owners address). CD 10/29.

▲ **Mich., Detroit**—GARAGE—Griswold Garages, Inc., c/o H. E. Beyster & Assoc., archts., 700 Griswold Bldg., Zone 26, 10 story, rein.-con., steel garage, incl. 2 stores, Larned and Griswold Sts. $2,000,000.

▲ **Mich., St. Joseph**—PLANT—Health Div. of Daystrom, Inc., Benton Harbor, plant 16 acre site, Hilltop Rd., $1,500,000.

▲ **Mont., Missoula**—PLANT—Waldorf Paper Products Co., P. A. Schilling, pres., 2250 Wabash Ave., St. Paul, Minn., plans by G. Dimond Assoc., Inc., Endicott-on Fdirth Bldg., St. Paul, Minn., pulp plant, main bldg., kilns, digesters, boilers, etc. $6,000,000 CD 10/25.

▲ **Tex., Bisnop**—PLANT—Celanese Corp. of America c/o 180 Madison Ave., New York, N. Y., expansion of chemical products plant, $6,500,000.

▲ **Tex., Houston**—STEEL PLANT—Jones & Laughlin Steel Corp., Melrose Bldg., steel plant. $300,000,000. Lockwood & Andrews, Union Natl. Bank Bldg., engrs., studying type structures needed for plant. A. C. Stimson Surveying Co., 2405 San Jacinto St., engr., site surveying. Raymond Concrete Pile Co., 610 Woodrow St., engr., drilling cores for fdn.

▲ **Tex., Houston**—PLANT—Texsteam Corp., 320 Hughes St., (subsidiary of Vapor Heating Corp., Chicago, Ill.), plant to mfg various types of mechanical equipment. $1,000,000; storage or warehousing, $150,000, 14 acre site, between Post Oak Rd. and Sam Houston Airport.

▲ **Tex., Nacogdoches**—PLANT—Bassons Industries Corp., 1424 W. Farms Rd., New York., and c/o John Streit, Nacogdoches, plant to mfg plastic, teflon insulated wire and cable products, plastic pipe, etc. $2,000,000.

▲ **Alta., Edmonton**—WAREHOUSE, etc.—City, Civic Block, sketch plans by Bell & McCulloch, 9946-106th St., warehouse and workshop bldg. $1,500,000.

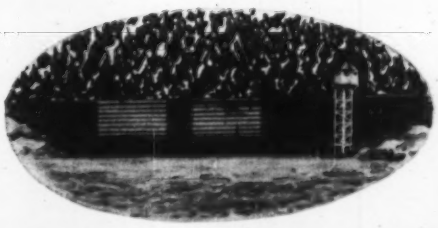
▲ **Ont., Brockville**—PLANT—Automatic Electric Sales Canada Ltd., 100 Strowger Blvd.; plans by Percy Booth, 4795 St. Catherine St. W., Montreal, Que., 86,000 ft. plant expansion, $1,500,000. T. Pringle & Son Ltd., 4795 St. Catherine St., W., Montreal, Que., consult. engrs.

UNCLASSIFIED

▲ **California and Hawaii**—UNDERWATER CABLES—Pacific Telephone & Telegraph Co., 140 New Montgomery St., San Francisco, Calif., 2 underwater cables from near Point Arena, Calif. to KoKo Head, Oahu, T. H., $35,000,000. Construction to begin around June 1957.

▲† **N. Y., Niagara Falls**—AA FACILITIES—U. S Engr., 111 E. 16 St., New York, Zone 3, plans by Thomas H. McKaig, 881 Main St., Buffalo, AA support facilities, Field Maintenance Shop at Fort Niagara, $500,000-$1,000,000; plans by John J. Kassner, 111 Broadway, New York, AA support facilities, Field Maintenance Shop, plans by Duane Lyman Assoc., 505 Delaware Ave., Buffalo, New York, AA support facilities, 2 miscellaneous utilities, $100,000-$500,000. CD 12/20.

▲ **Ont., Toronto**—EXHIBITION GRANDSTAND—Canadian National Exhibition Assn., Exhibition Park, Toronto, plans by Marani & Morris, 1250 Bay St., rein.-con., steel, brick exhibition grandstand Exhibition Park, $6,000,000. CD 11/29/55.



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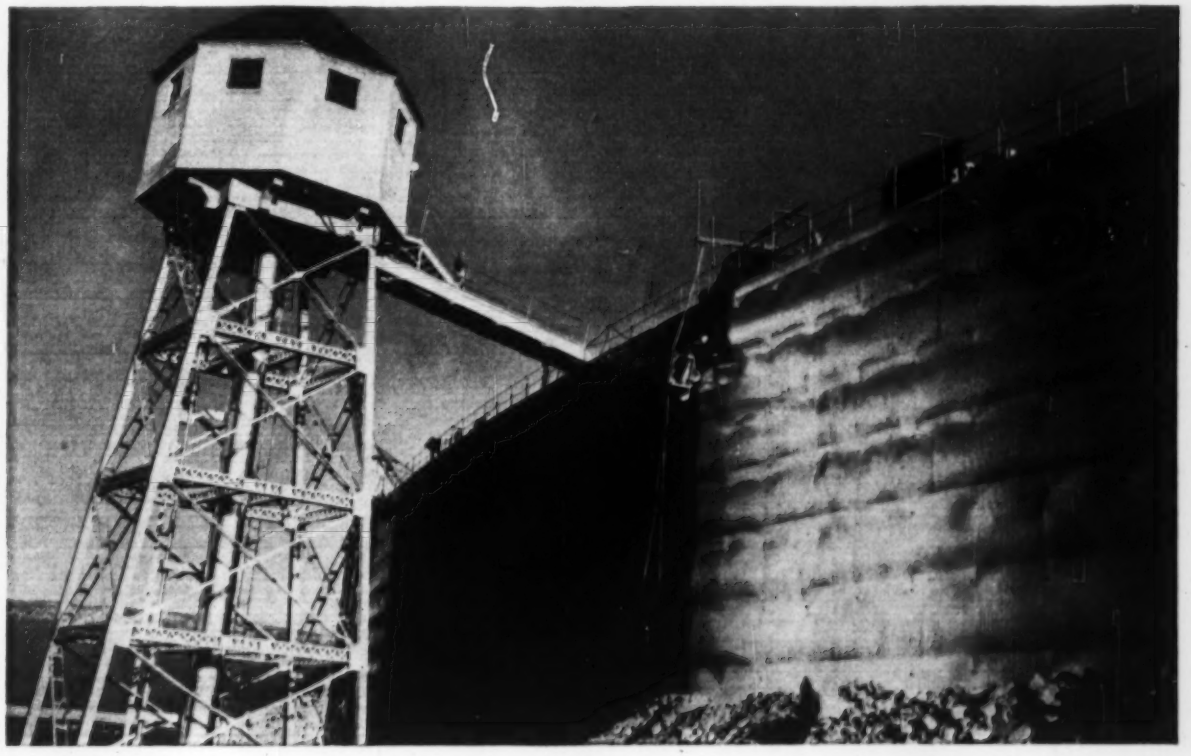

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 19 Connecticut November 20 Massachusetts
December 5 Rhode Island

STREETS AND ROADS

November 19 Connecticut November 20 Massachusetts

▲ **Mass., Chicopee Falls**—DORMITORIES—BA 11/26—U. S. Eng., 150 Causeway St., Boston, airmen's dormitories Westover Air Force Base, ENG-19-016-57-81. $1,000,000-$1,250,000. Plans deposit $35, refundable. Extended date. McClintock & Craig, Inc., 458 Bridge St., Springfield, and Cram & Ferguson, 248 Boylston St., Boston, archts. CD 10/11.

BUILDINGS—BA

▲ **Conn., Stamford** — FACTORY — BA 11/27 — Pitney-Bowes, Inc., 69 Walnut St., factory. $3,000,000. Leo F. Caproni, 132 Temple St., New Haven, archt. CD 12/15.

▲ **Mass., Amherst**—LABORATORY—BA 11/30—Commonwealth of Mass., University of Mass., Kenneth W. Johnson, treas., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U-602, 2 story brick, limestone trim chemistry laboratory addn. $1,694,000. Plans deposit $100. Appleton & Stearns, 53 State St., Boston, Mass., archts. CD 7/12/54.

▲ **R. I., Providence**—COLLEGE OF EDUCATION—BA 11/27—State R. I. & Prov. Plants, Div. Purchase, State House, Bid No. 394 to 401. Proj. No. Rice-23, College of Education Bldgs. $3,500,000. Plans deposit $150. Extended date. Howe, Prout & Ekman, 17 Custom House St., archts. CD 10/10.

▲ **Rhode Island**—HOUSING—BA 12/11—U. S. Eng., 150 Causeway St., Boston, Mass., construct and finance, Capehart Family House, at Bristol, North Kingston, Foster, North Smithfield and Coventry. ENG-19-016-57-17. $1,518,000. Plans deposit $10.

HEAVY CONSTRUCTION—LB & CA

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York 3, N. Y., CA, $3,271,063. South Windsor-Windsor Bridge across Connecticut River, South Windsor-Windsor, HARTFORD, CONN. Hartford Bridge Auth., 284 Sheldon St., Hartford, Conn. Bids Oct. 2. CD 10/25, under LB.

BUILDINGS—LB & CA

▲ **Wexler Constr. Co.**, 118 Needham St., Newton Highlands, Mass., CA $1,307,700. four DORMITORIES, HANOVER, N. H. Trustees Dartmouth College, Hanover, N. H. Bids Oct. 16. CD 10/18, under LB.

▲ **E & F Constr. Co.**, 94 Wells St., Bridgeport, Conn., LB $1,398,000 (6 bidders) two 4 story WOMEN'S DORMITORIES, DINING HALL, BRIDGEPORT, CONN. University of Bridgeport, 200 Park Pl., Bridgeport, Conn. Bids Oct. 30. CD 10/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 30 Pennsylvania

STREETS AND ROADS

November 30 Pennsylvania

BUILDINGS—BA

▲ **Pa., Monroeville** — HIGH SCHOOL — BA 11/19 — Monroeville School Auth., Turtle Creek, 1 and 2 story, approx. 150,000 sq. ft. masonry and aluminum Senior High School. $2,500,000. Plans deposit $100. Walter Schardt Assocs., 1001 South Ave., Wilkinsburg, archts. CD 6/19.

▲ **N. J., Atlantic City**—HOSPITAL WING—BA 12/14 Atlantic City Hospital, 26 S. Ohio Ave., new hospital wing and also entrance bldg. $2,500,000. Vincent G. Kling, 9818 Corinthian Ave., Phila., Pa., archt. Keast & Wood, 2031 Chestnut St., Phila Pa., engrs. CD 5/10.

† **N. Y., Bath**—RECREATION-THEATRE—BA 1/15—Veterans Admin., Munitions Bldg., Wash., D. C., constr. Recreation and Theatre Bldg. No. 92, Veterans Admin. Center. $900,000-$1,400,000. CD 9/19.

HEAVY CONSTRUCTION—LB & CA

▲ **Comrs. Parks, Dpt. Parks**, Arsenal Bldg., Central Park, 64 St. and Fifth Ave., New York 21, N. Y. rejected bids Oct. 22, South Beach Imprvts., Contr. 4A, promenade, playgrounds, parking field, utilities, Miller Field to Iona St., Richmond Boro, NEW YORK. LB $1,553,877 (A); LB $575,696 (B). CD 10/24, under LB.

BUILDINGS—LB & CA

▲ **Asbury Park Enterprises**, c/o Cronheim, 39 Branford Pl., Newark, N. J. CA, Est. $1,500,000. 7 story APARTMENT and STORES, Ocean Ave. between Asbury and 1 Ave., ASBURY PARK, N. J. Cronheim, Inc., 39 Branford Pl., Newark, N. J. Henry Boyer c/o owner, archt.

▲ **Ritter Bros.**, 1511 N. Cameron St., Harrisburg, Pa. LB $1,214,609. general constr. JUNIOR SENIOR HIGH SCHOOL, ENOLA, PA. East Pennsboro Twp. School Auth. School Bldg., Enola, Pa. Bids Oct. 30. CD 10/3.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa. CA $1,000,000. HOSPITAL, PHILA., PA. The Magee Memorial Hospital for Convalescents, c/o Thomas Hart, pres. Bd. Trustees, 15 and Walnut Sts., Phila., Pa. Hatfield Martin & White, 266 S. 17 St., Phila., Pa., archts. Horace B. Nicholson, 215 S. Broad St., Phila., Pa., engr. CD 1/26.

▲ **Ernest Di Sabatino & Sons**, 2601 W. Fourth St., Wilmington, Del., LB $1,769,000. Ogletown JUNIOR HIGH SCHOOL, Ogletown, NEWARK, DEL. Bd. Educ., Newark, Del. Bids Oct. 31. CD 12/13.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 21 Virginia

STREETS AND ROADS

November 21 Virginia November 30 Kentucky

BUILDINGS—BA

▲ **La., Alexandria**—HOUSING—BA On Or About 11/28—Base Procurement Office, England Air Force Base, construct and finance 300 housing units, armed services housing. (Capehart), Bids No. 16-600-57-34, $3,000,000. CD 10/10, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **Vanguard Constr. Co.**, 3478 Westminster Ave., Norfolk, Va., CA $1,229,804, sewers, RICHMOND, VA. City, Director Purchases & General Services, Mosque Bldg., Laurel and Main Sts., Richmond, Va. Bids Oct. 16. CD 8/31.

▲ **E. G. Singletary & Co.**, 105 Homewood Dr., Greensboro, N. C., LB $1,144,600, sewage treatment plant, GREENSBORO, N. C. City, City Hall, Greensboro, N. C. Bids Oct. 30. CD 10/18.

▲ **FLORIDA**—State Road Dpt., Tallahassee, **C. A. Scott Constr. Co. and Faulk & Coleman Constr. Co.**, Box 938, Tallahassee Fla., CA, $1,156,104. limerock, base, b. conc. box culverts, twin bridges, conc. sheet pile bulkheads 5.078 mi. SR 5, Job 7901-175, Volusia Co. Bids Oct. 31, awarded Nov. 1. CD 10/16, under LB.

▲ **Houston Contg. Co.**, 2707 Ferndale St., Houston, Tex. CA $3,250,000, 120 mi. 20 in. and 11 mi. 16 in. natural gas lines from Eunice to east near Thibadoux, LOUISIANA. Texas Gas Transmission Corp., Melrose Bldg., Houston, Tex. CD 12/16.

BUILDINGS—LB & CA

▲ **U. S. Eng.**, 2301 Grant St., Mobile 7, Ala., rejected bids Oct. 9, construct and finance 100-unit Capehart family HOUSING, ENG-01-076-57-2, FORT McCLELLAN, ALA. Will re-advertise. CD 10/12, under LB.

▲ **U. S. Eng.**, Box 1229, Galveston, Tex., cancelled bids to have been opened Oct. 31, construct and finance 2,000-unit permanent family HOUSING, Inv. 57-8, (Capehart) FORT POLK, LA. $15,000,000. CD 10/25.

▲ **Farnsworth & Chambers Co., Inc.**, Box 332, New Orleans, La., CA $1,244,600. 5 story Our Lady of Lourdes HOSPITAL addn., LAFAYETTE, LA. Our Lady of Lourdes Hospital, Lafayette, La. Bids Aug. 15, awarded Oct. 25. CD 8/29, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 20 Illinois November 21 Michigan

STREETS AND ROADS

November 20 Illinois November 21 Michigan
November 27 Ohio

BUILDINGS—BA

▲ **Mich., Holly**—SCHOOL—BA 11/29—Village, Holly Area School Dist., high school, Maple Ave. $1,200,000. Plans deposit $25. Extended date, H. E. Beyster & Assoc., Inc., 700 Griswold Bldg., Detroit, Zone 26, archt. CD 11/1.

▲ **Wis., LaCrosse**—SCHOOL—BA 11/29—Bd. Educ., 2 and 3 story, 185x214 ft. Logan High School addn., alterations. $1,100,000. Schubert, Sorensen & Assoc., 308 Hoeschler Bldg., engrs. CD 11/17/55.

▲ **Ill., Evanston**—HOSPITAL—BA 12/4—Evanston Hospital Assn., 2650 Ridge Ave., 6 story hospital addn. $3,500,000. Burnham & Hammond, 52 W. Jackson Blvd., Chicago, archts. CD 11/9/55.

BUILDINGS—SLC

▲ **Ill., Chicago Heights**—HIGH SCHOOL—Catholic Bishop of Chicago, 719 N. Wabash St., Chicago, soon lets contract Central Catholic High School, bit. driveways, parking lot, southwest corner Joe Orr Rd. and Ashland Ave. $1,500,000. R. L. Ignelzi, 29 W. 16 St., archt. Perkins & Will, 309 W. Jackson Blvd., Chicago, assoc. archts. CD 8/28/52.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,

O.—**W. J. Elliott & Sons**, Rte. 4, McConnelsville, O. LB $159,000, est. $173,500 (5 bidders) Type T-170, T-32 and structure 0.217 mi. SR 682-0.08, S-1137 (1), Proj. 447, Athens Co.;

O.—**National Engineering & Contracting Co.**, 1968 W. Third St., Cleveland, O., LB $1,765,790, est. $1,629,700 (3 bidders) type T-71 and structure 0.341 mi. USR 42R-17.43, I-1057 (2), City of Cleveland, Proj. No. 448, Cuyahoga Co.;

O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O. LB $2,458,485, est. $2,816,200, (8 bidders) type T-71 and structures 3.061 mi. SR 4W-7.81, I-316 (7), City of Cincinnati, Village of Elmwood Place, Proj. No. 449, Hamilton Co.;

O.—**Arthur S. Langenderfer, Inc.**, 4690 W. Bancroft St., Toledo, O., LB $949,965, est. $996,600 (2 bidders) Type T-50 on B-20 and T-70, 3.284 mi. C. R. No. 6, S-1209 (1), Village of Sylvania, Proj. No. 450, Lucas Co.;

O.—**The A. Bentley & Sons Co.**, 201 Belmont Ave., Toledo, O., LB $3,325,000, est $3,922,000 (7 bidders) type T-71 and structures 3.02 mi. USR 24-A-4-04, I-1052 (13), City of Toledo, Proj. No. 451, Lucas Co.;

O.—**Nilen Black, Inc.**, 706 E. Highland Ave., Wooster, O., LB $237,712, est $255,700 (5 bidders) type T-35, structure, 1.113 mi. SR 212 (2.73-3.50), S-1203 (1), Village of Bolivar, Proj. No. 452, Tuscarawas Co.;

O.—**A. J. Baltes, Inc.**, 11 Olive St., Norwalk, O., LB $798,238, est $890,100 (4 bidders) Type T-71 and structures 1.845 mi. SR 10-(13.75-15.25), Proj. No. 453, Lorain Co.; LB $346,315, est. $388,000 (4 bidders) Type T-71, 1.516 mi. USR 30N-6.13, Proj. 457, Richland Co.;

O.—**The McCourt Constr. Co.**, 720 Home Ave., Akron, O. LB $169,606, est. $160,100, Type T-35, 1.785 mi. SR 548-0.00, 21.36, Proj. No. 454, Medina and Wayne Counties;

O.—**Sidwell Bros.**, Rte. No. 2, S. Zanesville, O., LB $234,808, est. $340,900 (5 bidders) Type T-35, 3.105 mi. SR 75-4.71, Proj. No. 456, Perry Co.;

O.—**Peerless Constr. Co.**, 560 Rawson Ave., Fremont, O. LB $141,357, est. $148,200 (5 bidders) Type T-35, 0.803 mi. USR 6-21.59, Proj. 458, Sandusky Co.;

O.—**Smith Constr. Co. of Ohio**, P. O. Box 515, Vienna, O. LB $519,417, est. $532,000 (2 bidders) Type T-35 and structures 5.317 mi. SR 88-(7.04-11.93), Proj. 460 Trumbull Co.;

O.—**Harper Supply, Inc.**, 118 W. Front St., Napoleon, O., LB $155,409, est. $179,800 (5 bidders) Type T-35 on B-70 and structures 0.312 mi. SR 127-(12.37) (13.54), (15.16), Proj. 461, Van Wert Co.;

O.—**Shelly & Sands, Inc.**, Thornville, O., LB $1,214,766, est. $1,410,600 (3 bidders) Type T-35, 10.936 mi. USR 50A-29.60; SR 7-40.23, Washington Co. Bids Oct. 30. CD 10/22.

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield,

General Paving Co., Inc., 303 John St., Champaign, Ill., CA, $2,647,348. c. conc. paving 3.71 mi. concrete base course 1.17 mi. bit. resurf. all on U. S. 45, Champaign Co. Bids Oct. 23. CD 10/26, under LB.

▲ **Robert R. Anderson Co.**, 4550 W. Patterson St., Chicago, Ill., LB $2,049,141. Calumet Skyway Toll Bridge, Sect. 3-A-1, substructure for structures, storm sewers paving, etc. Dante Ave. to N. side of Elliott Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Nov. 1. CD 10/9.

▲ **Lombard & Long Co.**, 600 W. Jackson Bldg., Chicago, Ill., CA, $1,049,546, pumping station, chemical bldg. filter bldgs., etc., LAKE FOREST, ILL. City, City Hall, Lake Forest, Ill. Bids Sept. 17, CD 10/8, under LB;
Kuch & Watson, Inc., Lake Forest, Ill., CA, $397,387, water mains (Lake Forest, Ill.).

▲† **Al Johnson Constr. Co.**, 608 Foshay Tower, Minneapolis, Minn., **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., **Cunningham, Kiewit Co.**, 4229 Lafayette St., Omaha, Neb., and **Morrison-Knudsen Co., Inc.**, 319 Broadway Ave., Boise, Idaho. (joint bid) LB $18,338,145. dredging Amherstburg Channel 15 mi. down Detroit River from Woodward Ave., deepen from 21 ft. at present to 27.5 ft., Wayne Co., MICHIGAN. U. S. Eng., 600 E. Jefferson Ave., Detroit 26, Mich. Bids Nov. 2. CD 9/9/54, under New York.

BUILDINGS—LB & CA

▲ **Cantrell Brothers**, 116 York Ave., Elmhurst, Ill., Own Forces, $6,000,000. 240 HOMES, sewers, water and streets Grand and York Rd.; $2,000,000. SHOPPING CENTER, Grand and York Rd., BENSENVILLE, ILL.

▲ **Sumner Sollitt Co.**, 307 N. Michigan Ave., Chicago, Ill., LB $2,187,000. 204-unit HOUSING, Prairie Ave., Courts Exten., South Park Ave. and 27 St., CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago, Ill. Bids Oct. 30. CD 10/18.

▲ **Tonyan Constr. Co.**, 100 Borden St., McHenry, Ill., LB $1,544,312. HIGH SCHOOL addn., swimming pool, 500 S. Green St., MC-HENRY, ILL. School Dist. 156, 500 S. Green St., McHenry, Ill. Bids Oct. 12. CD 10/2.

▲ **S & L Constr. Co.**, 930 Penobscot Bldg., Detroit, Mich., CA Est. $1,200,000. SHOPPING CENTER, Grand River and Mooney St., FARMINGTON, MICH. Farmington Shopping Center, Farmington, Mich. Bids Oct. 23. CD 10/22.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Mo., St. Louis County**—DISTRIBUTION CENTER—BA 11/20—General Electric Appliance Div., General Electric Corp., 5021 Fyler Ave., St. Louis, Zone 9, 1 story, masonry, steel, concrete distribution center incl. 110,000 sq. ft. warehouse, 25,000 sq. ft. office

and display area, rail siding and truck liading facilities west side Warson Rd., in Lindbergh-Warson Industrial Center. $1,000,000. Syl G. Schmidt & Assoc., 1819 Railway Exchange Bldg., 611 Olive St., St. Louis, Zone 1, archt.-engr. CD 10/1.

▲ **Tex., Austin**—SUPREME COURTS—BA 11/30—State, State Bldg. comn., Admistration Bldg., 7 story, 2 bsmnt. levels, 148,000 sq. ft. supreme courts bldg. $3,000,000. Bid date changed. Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, Page, Southerland & Page, 602 West Ave., Austin and Mackie & Kamrath, 2713 Ferndale St., Houston, archts. Walter P. Moore, 2 Pinedale St., Houston and Blum & Gurrero, 1111 Neches St., Austin, engrs. CD 10/31.

▲ **Tex., Fort Worth**—CIVIL COURTS—BA 12/5—Tarrant Co., c/o Gus Brown, judge, Court House, 5 story, masonry civil courts bldg. on Courthouse Square. $2,200,000. Plans deposit $50. Wyatt C. Hedrick Co., 1200 T & P Bldg., archt. CD 6/8.

▲ **Mo., St. Louis County**—SCHOOL—BA 12/6—St. Louis Archdiocese of Catholic Church, Rev. James R. Hartnett, exec. secy, 3810 Lindell Blvd., St. Louis, Zone 8, St. Thomas of Aquinas High School on 13 acre tract northside Lindbergh Blvd. at intersection with San Fernando Hills subdivision. $1,500,000. Hellmuth, Obata & Kassabaum, 315 N. 10 St., St. Louis, Zone 1, archts. CD 5/31.

▲† **Iowa., Burlington**—POST OFFICE—BA About 12/12—General Service Admin., P. Bldgs. Serv., General Service Bldg., 19 and F Sts. N.W., Wash. 25, D. C. (a) financing, constructing and sale of building (b) financing construction and sale of building, (c) construction of building, U. S. Post Office, etc., Jefferson, Main and Front Sts. $1,114,000. CD 11/16/55.

▲† **Kan., Kansas City**—POST OFFICE—BA About 12/12—General Services Admin., P. Bldgs. Serv., General Services Bldg., 19 and F Sts. N.W., Wash. 25, D. C. (a) financing, constructing and sale of building (b) financing construction and sale of the building, (c) constructing building, U. S. Post Office and Court House, Seventh and Ann Ave. and Armstrong Ave. $1,930,000. CD 10/4/55.

▲ **Kan., Topeka**—HOUSING—BA 1/15—Purchase Div. Directorate of Procurement & Prof. Topeka Air Force Base, Topeka, construct and finance 640 housing units, for armed services, (Capehart), Inv. 512. $7,500,000. CD 2/13.

▲ **Tex., El Paso**—SHOPPING CENTER—Bids Asked—Owners, c/o J. Ted Cottle, 112 N. Stanton St., shopping center. $3,250,000. CD 9/26/55.

BUILDINGS—SLC

▲ **Tex., Amarillo**—DEPARTMENT STORE—Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill., soon lets contract 104,000 sq. ft. department store. $1,000,000. George L. Dahl, 2101 N. St. Paul St., Dallas, archt. CD 4/19.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,

Mo.—**W. J. Menefee Constr. Co.**, 419 W. Main St., Sedalia, Mo. LB $1,057,644. c. conc. 10.543 mi., St. Charles Co.;

Mo.—**Koss Constr. Co.**, 205 Farm Bureau Bldg., Des Moines, Iowa. LB $701,224. 24 ft. c. conc. 6.885 mi., Dunklin Co.;

Mo.—**M. E. Gillioz**, Monett, Mo. LB $493,017. 24 ft. c. conc. 4.88 mi., Barry Co.; LB $79,635. 24 ft. c. conc. 0.35 mi., Barry Co.;

Mo.—**J. A. Tobin Constr. Co.**, 3700 Rainbow Blvd., Kansas City, Mo. LB $156,717. 24 ft. c. conc. 1.26 mi., Buchanan Co.; LB $119,899. 24 ft. c. conc. 0.921 mi., Andrew Co.;

Mo.—**Frank Trager**, Chillicothe, Mo. LB $89,881. grav. or crushed stone surf. 9.354 mi., Saline Co.;

Mo.—**R. G. Aldridge**, 1610 Nebraska St., Kansas City, Kan. LB $863,737. c. conc., sanitary sewer, water main, Marion Co. Bids Nov. 1. CD 10/19.

▲ **TEXAS**—State Hy. Dpt., Austin,

James Constr. Co., Box 9575, Oklahoma City, Okla. CA $1,128,637. 0.176 mi. Corpus Christi Ship Channel Bridge, Contr. II, substructure for steel spans on Hy. US 281, Proj. U 204 (7), Nueces Co. Bids Oct. 18. CD 10/24, under LB.

▲ **TEXAS**—State Hy. Dpt., Austin,

rejected bids Oct. 17, Contr. III Corpus Christi Ship Channel Bridge, Fed. Proj. U-204 (8), Nueces Co. LB $3,911,816 (Correction—status). CD 10/24, under CA.

▲ **Flenniken Constr. Co.**, 5206 Maple St., Dallas, Tex., and **L. H. Lacy Constr. Co.**, 5603 Yale St., Dallas, Tex. CA $4,928,685. combined work at Love Field, DALLAS, TEX. City, City Hall, Dallas, Tex. Bids Oct. 29. CD 11/1, under LB.

BUILDINGS—LB & CA

▲ **Cowdin Bros.**, 411 S. Haskell St., Dallas, Tex. CA $1,367,119, NEWSPAPER PLANT addition, DALLAS, TEX. Dallas Times Herald, Herald Square, Dallas, Tex. Bids Sept. 14. CD 10/8, under LB.

▲ **J. E. Morgan & Sons**, Box 6029, Dallas, Tex., LB $1,686,200, est. $2,000,000. 8 story OFFICE-BANK, Preston Rd., DALLAS, TEX. Preston State Bank, c/o R. E. Alexander, Jr., 3704 Abrams Rd., Dallas, Tex., archt. Bids Oct. 30. CD 10/2.

▲ **Jones-Hettelsater Constr. Co.**, 1911 Baltimore Ave., Kansas City, Mo., CA Est. $1,000,000. 60x50 ft. rein.-con. MILL. 84x300 ft., steel, concrete WAREHOUSE, 37x75 ft. concrete OFFICE BLDG., FORT WORTH, TEX. General Mills, Inc., 400 2nd Ave. S., Minneapolis, Minn.

▲ **Linbeck Constr. Co.**, Box 13067, Houston, Tex., LB $2,535,000, est. $2,600,000. Yates Area SENIOR HIGH SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Nov. 1. CD 10/3.

▲ **Southwestern Constr. Co.**, Box 1204, Houston, Tex. CA $1,000,000. PLANT or MAINTENANCE BLDG., HOUSTON, TEX. Hughes Tool Co., 5425 Polk St., Houston, Tex. CD 4/25.

▲ **Fish Engineering Corp.**, M & M Bldg., Houston, Tex. CA $6,000,000. design and construct petrochemical styrene PLANT, ODESSA, TEX. Odessa Styrene Co., c/o C. L. Moore of El Paso Natural Gas Products Co., Odessa, Tex. CD 11/7.

▲ **Lembke-Clough & King, Inc.**, 1013 Arcturus Dr., Colorado Springs, Colo., LB $6,463,069. 12 story 300-bed HOSPITAL, COLORADO SPRINGS, COLO. Glockner-Penrose Hospital, 2200 N. Tejon St., Colorado Springs, Colo. Bids Oct. 31. CD 9/18.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 28, December 5 California
November 29 Nevada
STREETS AND ROADS
November 28, 29, December 5, 6 California

▲ **Calif., Los Angeles**—BA 12/14—Los Angeles County Flood Control Dist., 2250 Alcazar St., Proj. 84, Slauson Ave. Relief Drain, $6,493,000. H. E. Hedger, c/o owner, engr. CD 11/7/52.

BUILDINGS—BA

▲ **Calif., Centerville**—HOSPITAL—BA 11/27—Washington Township Hospital, Bd. Directors, Washington Twp., Centerville, Washington Township Hospital addn. $1,500,000. Plans deposit $100 for general contract; $25 for others. Stone, Mulloy, Marraccini & Patterson, Architects, AIA, 619 California St., San Francisco, archts. CD 2/14.

▲ **Wash., Mount Vernon**—HOSPITAL—BA 11/27—Public Hospital Dist. No. 1, 2 story, 78 bed hospital, $1,000,000. Plans deposit $50. J. W. Maloney, Central Bldg., Seattle, Zone 4, archt. CD 9/20.

BUILDINGS—SLC

▲ **Calif., San Jose**—PLANT—International Business Machines, 99 Notre Dame St., soon lets contract rein.-con., structural steel I.B.M. Plant Phase No. 2. $8,750,000. John S. Bolles, 215 Leidesdorff St., Pier 5, San Francisco, archt. CD 10/25.

HEAVY CONSTRUCTION—LB & CA

▲ **El Paso Natural Gas Co.**, E. P. N. G. Co. Bldg., El Paso, Tex. Own Forces, $9,500,000. laying 193 mi. 34 in. gas line between San Juan Basin and Topock, $1,350,000. laying 38 mi. 20 in. gas line between San Juan Main line and Phoenix, ARIZONA. CD 2/5/53, under Texas, New Mexico, Arizona and California.

▲† **U. S. Eng.**, 751 S. Figueroa St., Los Angeles, Calif., cancelled bids to have been opened Nov. 8, airmen's dormitories, Luke Air Force Base, ENG-04-353-57-30, PHOENIX, ARIZ. $1,000,000. CD 10/17.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Gordon H. Ball and Ball & Simpson, 685 Delaware St., Berkeley, Calif., LB $6,419,253, est. $6,900,000. (7 bidders) freeway 9.9 mi. with frontage roads, ramps and interchanges and 14 bridges pumping plant between Arm Springs Junction and Beard Rd., Alameda Co. Bids Nov. 7. CD 10/4.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Peter Kiewit Sons Co., 345 Kieways Ave., Arcadia, Calif., CA $2,168,770. grading, surf. 7.2 mi. U. S. Alternate 101, Ventura Co. Bids Oct. 18, awarded Nov. 2. CD 10/22, under LB.

▲† **Diversified Builders, Inc.**, P. O. Box 390, Montebello, Calif., LB $1,080,000. (4 bidders) ground ballastic ranges, Naval Ordnance Test Station, China Lake, Spec. 4198-56, INYOKERN, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Nov. 1. CD 10/18.

BUILDINGS—LB & CA

▲ **Campbell Constr. & Equip. Co.**, 1150 Folsom St., San Francisco, Calif., CA Est. $3,000,000. 4-story SEMINARY, KENMORE, WASH. Catholic Archdiocese of Seattle, 907 Terry St., Seattle, Wash. J. W. Maloney, Central Bldg., Seattle 4, Wash., archt. CD 10/25.

▲ **Campbell Constr. Co.**, 800 "R" St., Sacramento, Calif., CA $1,183,321. La Sierra HIGH SCHOOL addn., CARMICHAEL, CALIF. San Juan Union High School Dist., 7551 Greenbach Lane, Fair Oaks, Calif. Bids Oct. 24, awarded Oct. 31. CD 11/3, under LB.

▲ **Dinwiddie Constr. Co.**, 210 Crocker Bldg., San Francisco, Calif., CA, $2,016,000. 3 story, 82,226 sq. ft. DEPARTMENT STORE, HAYWARD, CALIF. The Emporium-Capwell Co., 835 Market St., San Francisco, Calif. Welton Becket & Assoc., 153 Maiden Lane, San Francisco, Calif., archts. CD 2/8/55.

▲ **Hayward Union High School Dist.**, 22300 Foothill Blvd., Hayward, Calif., rejected bids Sept. 12, Tennyson HIGH SCHOOL, HAYWARD, CALIF. LB $3,038,000. CD 9/20, under LB.

▲ **Campbell Soup Co.**, c/o John S. Bolles, archt., Pier 5, San Francisco, Calif., rejected bids Oct. 9, 1 story concrete block, mushroom PLANT, Gazos Creek Area, PESCADERO, CALIF. Est. $1,000,000. Will readvertise. CD 10/2.

▲ **McNeil Constr. Co.**, 5858 Wilshire Blvd., San Diego, Calif., CA, $2,404,346. FACTORY OFFICE BLDG., 5001 Kearney Villa Rd., SAN DIEGO, CALIF. Convair Astronautics Div., General Dynamics Corp., 3165 Pacific Hy., San Diego, Calif. Bids Oct. 17, awarded Oct. 20. CD 5/4.

▲ **Williams & Burrows**, 500 Harbor Blvd., Belmont, Calif. CA, $4,561,615. 7 story, rein.-con. NURSING WING, Santa Clara County Hospital, SAN JOSE, CALIF. Bd. Supervs., Santa Clara Co., Court House, San Jose, Calif. Bids Oct. 3, awarded Oct. 26. CD 10/9, under LB.

▲ **San Mateo Investment Co.**, 25 Ave. and South El Camino Rezl, San Mateo, Calif., Owner Builds. $1,000,000. 24-alley BOWLING ALLEY, SAN MATEO, CALIF. Gordon F. Powers, 3667 Atlantic Ave., Long Beach, Calif., archt. CD 5/16.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 21 Ontario

BUILDINGS—BA

▲ **Ont., Toronto**—HOSPITAL—BA 12/12—City, City Hall, Toronto East General Hospital extension incl. (1) North and south exten. to west wing, (2) outpatients dept. exten. (3) laundry and internes' residence (4) laundry and internes residence (alternative design) Coxwell and Sammon Aves., East York, $3,200,000. Auguste Martineau & Assocs., 22911A Yonge St., archt. Arthur H. Frampton & Co., 38 King St. W., engrs. CD 2/6.

HEAVY CONSTRUCTION—LB & CA

▲ **Poole Constr. Co., Ltd.**, 2402 2a St., S. E., Calgary, Alta, CA Est. $7,000,000. 70 ft. high, 1,000 ft. long earthfill dam on Whitehorse Rapids to provide area with hydro-electric power, Whitehorse, YUKON TERRITORY, Northern Canada Power Comn., 150 Wellington St., Ottawa, Ont. Bids Oct. 29, awarded Oct. 30. CD 10/7.

BUILDINGS—LB & CA

▲ **Atlantic Development & Investment Corp. Ltd.**, 51 Yonge St., Toronto, Ont. Owner Builds, $10,000,000 493-room, 22 story, rein.-con., glazed brick, HOTEL, Carlton St., 450-car 7-level ramp GARAGE at rear of hotel, TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont. archt. CD 1/5, under Ben Seaton, as owner.

▲ **Atlantic Development & Investment Corp., Ltd.**, 51 Yonge St., Toronto, Ont. Owner Builds. $15,000,000. 18 story OFFICE, Carlton and Younge Sts., TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt. CD 3/21.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ † **PANAMA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hys., 18 and F Sts. N. W., Wash. 25, D. C.

Framoroco S.A. and Constructora del Pacifico, Panama City, CA $2,477,416. Proj. 15, approx. 28 mi. grading, small drainage structures, selected materials sub-base, crushed stone base course and nine bridges. Bids Oct. 17. CD 10/23, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ Bids are being taken on the following project under International competitive bidding of NATO.

FRANCE

Secretariat d'Etat a l'Industrie et au Commerce, Service Special des Depots d'Hydrocarbures, 85 Boulevard de Montparnasse, Paris, supply and installation of pipes as follows: 87 kilometers 10 in. pipe Langres-Mirecourt, $2,430,000; 101 kilometers, 10 in. pipe, Mirecourt-Phalsbourg, $2,857,140; Mirecourt-Metz 76 kilometers, 8 in. pipe, $1,940,208. Deux-Ponts-Phalsbourg, 48 kilometers of 8 in. pipe, $1,125,714; Phalsbourg-Strasbourg, 56 kilometers 8 in. pipe, $1,400,000; Metz-Marville, 74 kilometers, 4 in. pipe, $1,057,000. Firms wishing to participate in this work should submit their applications to bid before November 17. Bids Asked.

Companies desiring to bid who are not already certified to participate in NATO projects should send their qualifications to the Trade Development Division, Bureau of Foreign Commerce, U. S. Department of Commerce, Wash. 25, D. C., for a brochure describing the NATO international bidding program.

▲ Bids are being taken on the following project under International competitive bidding of NATO.

Ministero Difesa-Aeronautica, Direzione Generale Demanio, Ufficio Studi, Ia Sezione, viale Castro Pretorio, Rome.

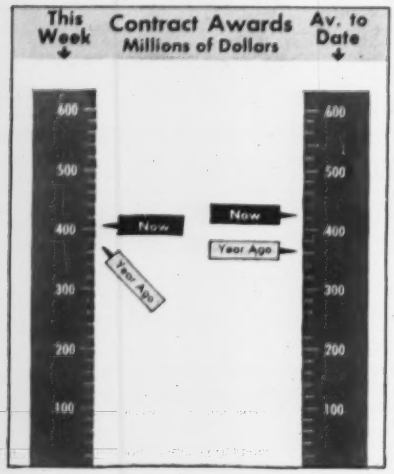
ITALY

Proj. 054, const. 7 pumping stations and 2 fuel storages interconnected to pipe line. $1,520,000. Firms wishing to participate in this project should submit their applications before November 12 for opening of bids December 20. A brochure describing the NATO international competitive bidding program is available on request from the Trade Development Division.

(Proposal Advertisement see pp. 119 to 122)

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 46 wks 1956	Chge %
	millions		
Federal	$50.4	$1,533.9	+1
State and Municipal	116.6	5,840.6	+25
Total Public	167.0	7,374.5	+19
Total Private	202.8	12,012.5	+14
U. S. Total	$369.8	$19,387.0	+16
By Type of Work			
Waterworks	$5.4	$318.9	+32
Sewerage	10.6	535.2	+54
Bridges	10.5	556.8	+29
Highways	45.9	2,218.8	+16
Earthwork, Waterways	6.7	661.4	+35
Buildings:			
Public, Excl. Housg.	37.5	1,844.5	+21
Public Housing	1.0	288.5	+21
Private Housing	61.6	4,922.7	−12
Commercial	27.9	1,706.4	+13
Industrial	94.1	4,706.7	+84
Unclassified	68.6	1,627.1	−12
U. S. Total	$369.8	$19,387.0	+16

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

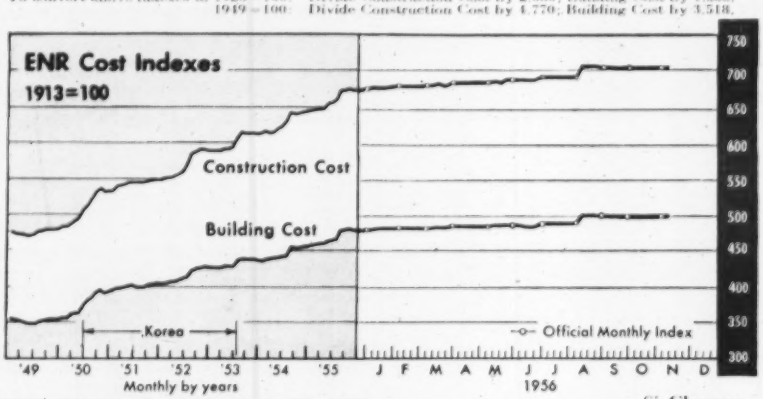
	Week of Nov. 8	Cum. 45 wks 1956	Chge '55-'56 %
	millions		
Corporate Securities	$85.1	$4,260.9	+37
State and Municipal:			
All Except Housing	61.1	4,086.3	−1
Housing	48.4	70.7	−2
Federal Loans	...	134.0	+12
Federal Aid	...	1,070.0	+25
Total Nonfederal	$194.6	$9,641.9	+16
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$194.6	$13,118.1	+12

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Nov. 8 1956	% Change from Oct. 11 1956	% Change from Nov. 10 1955
Construction Cost	704.13†	−0.02	+4.7
Building Cost	500.48	+0.1	+4.5

† Last week this index listed as 904.13 instead of 704.13.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
To convert above indexes to 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



CONTRACTS AWARDED

Millions of dollars	October 1956	10-Mos. 1956	% Change from 1955 Oct.	% Change from 1955 10-Mos.
Total U. S., ENR reported	$1,878.3	$18,386.0	+23	+17
Private	1,141.5	11,475.7	+15	+17
Public	736.8	6,910.3	+39	+18
State and Municipal	607.5	5,460.2	+52	+23
Federal	129.3	1,450.1	− 1	+ 2
ENR Volume Index, 1913 = 100	729	688	+16	+13

NEW CONSTRUCTION CAPITAL

Millions of dollars				
Total U. S.	$747.1	$12,643.5	+ 1	+16
State and Municipal Bond Sales	442.7	3,882.9	+ 2	+ 8
Corporate Security Sales	296.1	4,080.3	−0.4	+40
Federal Loans, Aid (nonfederal work)	8.3	1,204.0	+24	+24
Federal Appropriations (federal work)	0	3,476.2*		+0.3

* Includes funds for outside U. S.

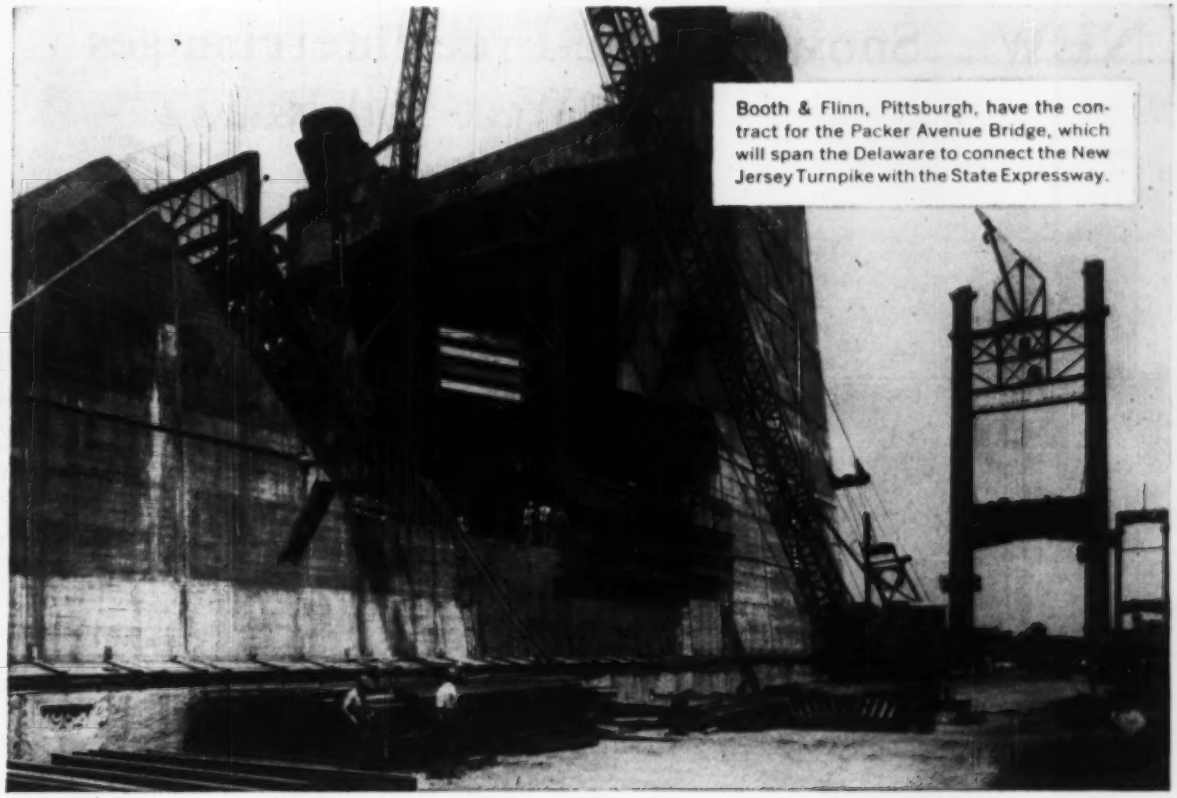
MATERIALS SHIPMENTS

	Unit	July (Jl) Aug. (A) Sept. (S) 1956	Cum. (No. of Mos.) 1956	% Change fr. Year Ago Mo.	% Change fr. Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	31,333(Jl)	173,627(7)	+ 8	+ 6
Conc Paving Awards, PCA	thous sq yd	5,267(S)	65,969(9)	− 9	− 8
Fabricated Structural Steel	thous tons	241(S)	2,344(9)	−17	+ 7
Bookings, AISC	thous tons	246(S)	2,979(9)	−28	+11
Reinforcing Bars, Net, AISI	thous tons	238(Jl&A)	1,545(8)	−37	+11
Lumber, NLMA	mil fbm	3,262(A)	25,134(8)	−11	− 7
Orders	mil fbm	3,120(A)	24,760(8)	−16	−10
Production	mil fbm	3,537(A)	25,424(8)	− 3	− 3
Douglas Fir Plywood, DFPA, 3/8" basis					
Production (average per week)	mil sq ft	103.0(S)	98.8(9)	+ 8	+ 6
Orders (average per week)	mil sq ft	108.5(S)	94.3(9)	+15	+ 1
Clay Products, Bur Census					
Brick, Unglazed, Common, Face	mil bri	618.6(Jl)	3,968.6(7)	− 1	+0.4
Vitrified Clay Sewer Pipe	thous tons	178.0(Jl)	1,062.0(7)	+ 4	+ 1
Structural Tile, Unglazed	thous tons	56.8(Jl)	396.2(7)	−19	−18
Asphalt Products, Bur Census					
Asphalt Roofing	thous sales sqs	6,171(A)	41,147(8)	−10	− 5
Asphalt Siding	thous sales sqs	117(A)	771(8)	− 4	− 5
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	66.0(A)	747.2(8)	−34	+10
Wire and Cable	mil lbs	26.6(A)	208.0(8)	+10	+24
Extruded Shapes (soft alloys)	mil lbs	54.4(A)	436.2(8)	− 2	+ 7

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	3,301(S)	2,991(9)**	+ 7	+ 9
Contractor Failures, Dun & Bradstreet					
Number		146(S)	1,298(9)	+28	+30
Liabilities	thous	$7,840(S)	$70,410(9)	+84	+23

** Average per month



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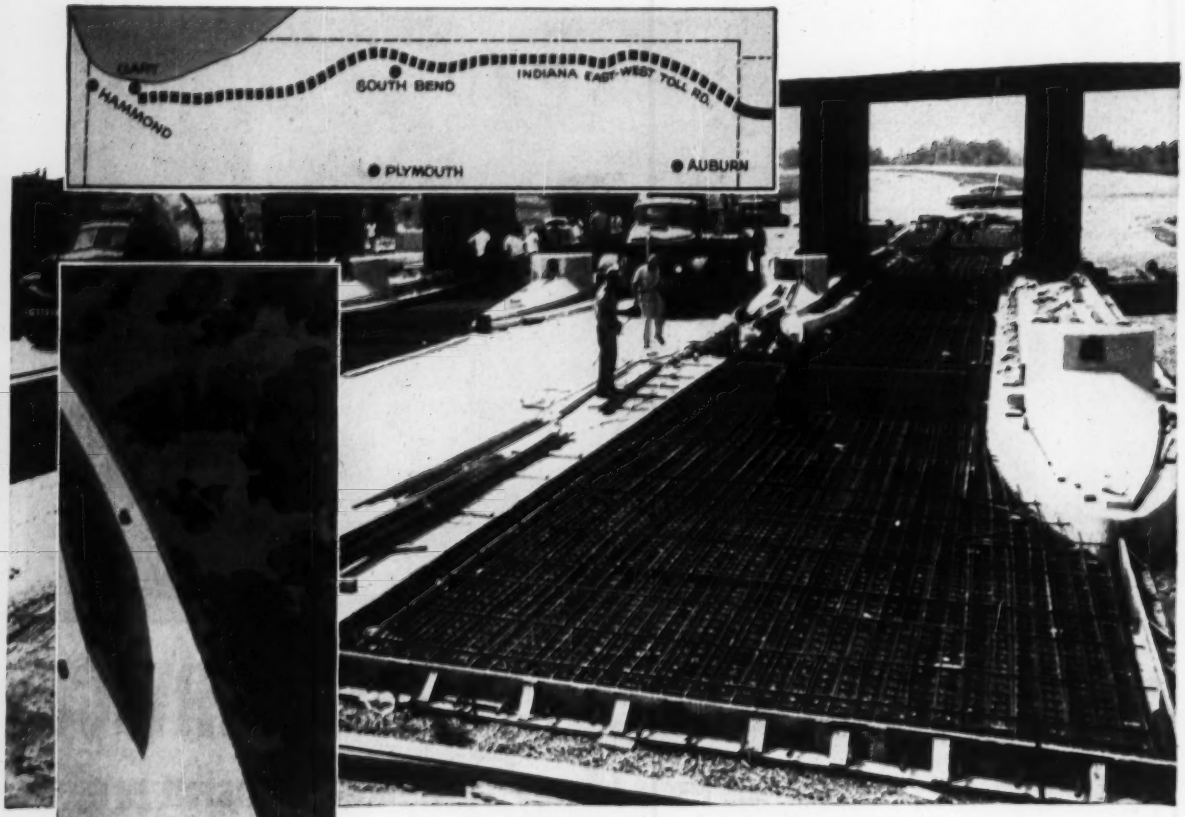

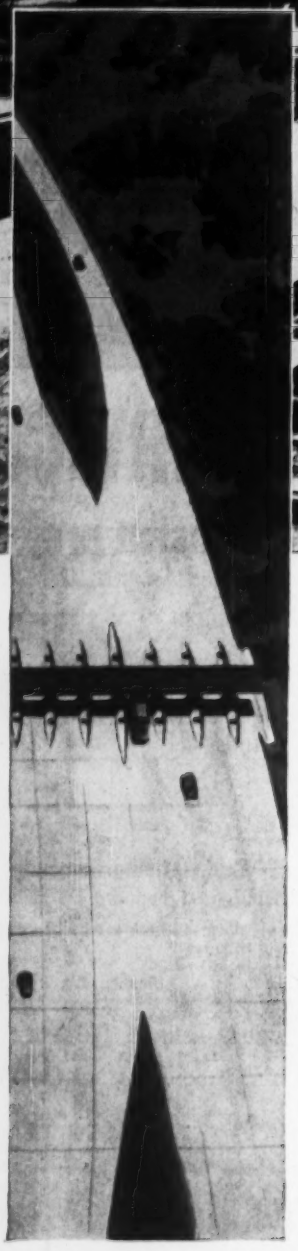

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With the forthcoming expansion of the nation's highway systems, roadbuilders in the snow belt should give serious consideration to the advantages of automatic snow and ice melting in highway construction... for interchanges, bridge floors, elevated ramp sections, over-passes, and other exposed road sections where conventional control methods may be both costly and inadequate.

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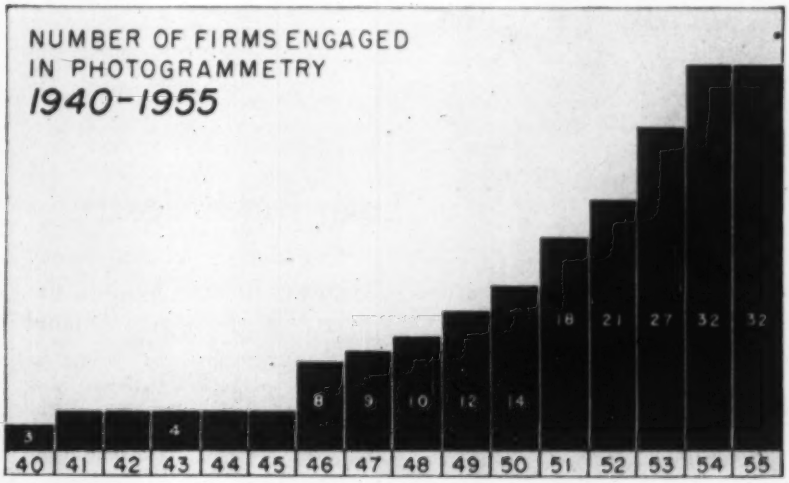


Photogrammetry's growth sets stage for . . .

Doubling a Market in a Decade

Photogrammetry, well-established as an engineering tool, is also becoming well-established from the business standpoint.

There are now approximately 50 private firms professionally engaged in aerial photography and photogrammetry for mapping purposes, according to a recent study made by C. L. Miller, assistant professor of surveying at Massachusetts Institute of Technology.

In addition, there are at least another 50 firms that are in the aerial photography field to a limited extent that were not included in Professor Miller's study.

Of the 50 professional firms, 18 may be classified as aerial photographic firms and 32 as photogrammetric firms. The latter are equipped with stereoplotting instruments.

Since some of the photogrammetric companies subcontract their aerial photography to other firms, Professor Miller found that there are actually 33 companies in the field of aerial photography.

Airborne surveying did some high flying in the decade from 1945 to 1955. During this period, the number of firms engaged in photogrammetry jumped from four to 32. Although the exact figures are not yet available, Professor Miller feels there has been a significant increase in the number of photogrammetric firms this year.

And, Miller expects the number of firms in the photogrammetric field to double in the next 10 years because of the impact of the new federal-aid highway program.

Are most photogrammetric firms active just in this one branch of the field? Miller says no. In fact, in many cases, the photogrammetric activities are subordinate to the firm's other work.

For example, 15 of the firms covered in the Miller study actually are consulting and civil engineering firms with a photogrammetric division.

Although the bulk of the photogrammetric work probably will continue to be performed by the large aerial survey firms that specialize in this field, Miller says there is a significant trend toward the addition of photogrammetric facilities by smaller civil engineering and surveying firms operating on a local and regional basis.

• **Where are they?**—Of the 50 photogrammetric firms covered in the study, 14 are in the North; five are in the South; three in the Midwest; four in the Southwest; and the biggest bulk, 24, are in the West.

Of these 50, five are considered local firms, 26 operate throughout one region, and 19 are national in scope. Of the 19 national firms, 10 also work overseas.

From a business standpoint, it's interesting to note the equipment these firms own, the men they employ, and the fees they collect.

These 50 photogrammetric firms covered in the Miller study own and operate a total of 158 airplanes and 261 aerial cameras. And, while some civil engineers feel that few precision stereoplotters are available in the United States, Professor Miller found that these 50 firms owned 277 such precision instruments.

• **Whom do they employ?**—The study showed that these firms employed 264 engineers, 325 stereoplotters, 742 draftsmen, and 180 field survey crews. But, the field isn't getting much help from engineering schools in providing some of this trained personnel, according to Professor Miller.

He says in the report:

"The failure of the engineering schools to provide education facilities in this important field is quite evident from the fact that, although the firms classify 186 of their men as photogrammetric engineers, only 40 had completed a college course in photogrammetry."

• **How much business?**—In comparison with other segments of the construction business, the total business volume in the photogrammetric field probably seems small.

The study reported an estimated total business volume for the 50 firms of about $23 million a year. About $8.3 million in fees came in for aerial photography services; $14.7 million was for photogrammetric services.

One third of the total fees came from the federal government. State and local governments accounted for another 27%, and the remaining 40% came from private industry.

Road Materials Plentiful In Nearly All Key Cities

Roadbuilding materials, including cement and aggregates, are in good supply in most of the key cities surveyed by ENGINEERING NEWS-RECORD this month. These are the principal exceptions:

• **Cement**—A temporary shortage of cement in Detroit is clearing up. The shortage was due to a strike, now settled, at the Huron Cement plant at Alpena, Mich. The local shortage was alleviated by rail shipments from Ohio, Illinois, Pennsylvania and New York. The Toronto shortage continues.

• **Crushed slag**—Baltimore reports a slight shortage of crushed slag but delivery times have been cut to only a few days. With the steel mills operating full blast again, the once-short city of Birmingham now reports a plentiful supply.

• **Gravel**—Only one major city, Cleveland, currently reports a shortage of gravel.

• **Ready-mixed concrete**—Chicago is the only major area short.

(B&F continued on page 108)

Construction Outlays Set October Record

Despite a slight seasonal decline, outlays for construction put in place set a new October high.

The $4.1-billion total for the month edged the previous high, set last year.

Most major construction categories, except housing, continued strong.

New October records were posted for private industrial plants, highways, public utilities, office buildings, sewer and water facilities, churches and public schools.

Meanwhile, the value of housing put in place skidded to a level more than 14% below the October record of a year ago.

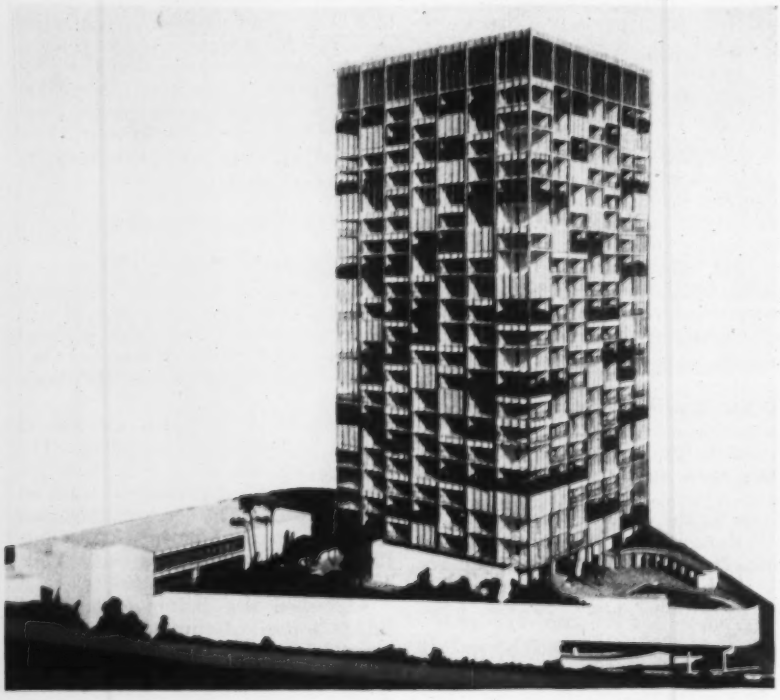
On a seasonally adjusted basis, new construction activity for the first 10 months of this year has been at an annual rate of more than $44 billion, compared with $43 billion in 1955. Actual expenditures for the first 10 months ran 3% ahead of the corresponding 1955 figure.

Public construction outlays in the January-through-October period totaled $11.3 billion, 7% above the comparable 1955 period, principally because of sizable increases in highways, and sewer and water facilities.

Federal work dropped moderately during this period, the Bureau of Labor Statistics reported. Advances on military facilities and conservation and development projects failed to offset the sharp drop in work for the Atomic Energy Commission.

The federal government spent almost 20% more this year than last for grants-in-aid on state and local construction. However, the proportion of federal funds is not considered high. During the first 10 months, federal grants accounted for about 4% of the total outlays for state and local school construction; 7% for hospitals and 15% for highways.

Brightest aspect of the residential market for construction put in place is the additions and alteration field. At the end of the first 10 months, this type of work totals $1.2 billion, 9% ahead of the comparable 1955 period. October alone was 16% higher than the same month last year.



$10-Million Co-op Apartment Planned

A 22-story, $10-million luxury co-operative apartment building is slated to get under way soon in Beverly Hills, Calif. Designed by the architectural firm of Pereira & Luckman, the 102-unit project will include a three-level garage, a swimming pool; cabanas, private gardens and a health club as well as a private club on the roof. Paul Trousdale and Clinton Murchson, Jr., are the developers.

Loan Funds Scarce

Shortage of cheap money causes civilian housing delays at Redstone Arsenal

The "crash" housing program at Huntsville, Ala., to provide living quarters for essential civilians in the stepped-up missile and rocket research program at Redstone Arsenal is being threatened with delays. The reason is a paucity of Federal Housing Administration and Veterans Administration mortgage money.

Huntsville, like most other cities throughout the nation, has been hit by the tight money market. Scores of families pouring into the city each week find rental housing scarce and mortgage money for VA and FHA housing loans almost non-existent.

The recently-enacted Title 809 of the National Housing Act, designed to encourage construction of houses for essential civilian employees of the Defense Department, was supposed to ease the housing situation.

But, local real estate men say that the law presumed loan money would be available. The new title does not provide a source of mortgage money. It merely enables the Defense Department to give an additional guarantee on FHA-insured mortgages and provides for lower downpayments and longer amortization periods.

Conventional mortgage loans are available in Huntsville, but many of the incoming families apparently cannot meet the downpayment requirements for conventional loans. And, in the Huntsville area, conventional interest rates range from 5½% up, as against 4½% for VA and FHA mortgages.

Old City: New Look

Long-term, $250-million face-lifting mapped for section in Philadelphia

Philadelphia's historic central city area may be modernized at a cost of $250 million in a long-range program that will be spearheaded by private capital.

A non-profit organization, the Old

(Continued on page 110)

WHOLE FLOOR OF BUILDING has been pulled loose by this crane of John J. Duane Company. To do it, workmen drove two holes in the floor (walls and roof had already been removed) and inserted cable down through holes and up to crane. Crane then tugged until floor ripped loose. This is typical of workout the firm's cranes receive, but using Cities Service lubricants they give flawless performance.

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Construction Market: Baltimore

"Tight money is keeping the lid on the pot," a Baltimore banker said last week. He was talking about his city's construction market, now bubbling like a kettle of boiling water.

A survey of Baltimore's contractors, lending institutions, public agencies and equipment suppliers shows that homebuilders are about the only people getting burned in the current situation.

"Do we have enough work?" a spokesman for union-shop contractors asked rhetorically. "Why, we have so much going on that out-of-state contractors are moving in fast."

This optimism is prevalent despite the general belief that construction loan money, both the short-term and long-term variety, promises to be short for months to come.

James W. Rouse, Baltimore mortgage banker, says the money shortage is delaying and cutting back on commercial projects, is curtailing homebuilding and, to a lesser extent, is crimping industrial expansion.

But, he warns that incessant talk about tight money should not becloud the fact that the Baltimore construction industry is in remarkably healthy shape and promises to stay that way into the foreseeable future.

In public works alone, where tight money is less of a factor, contractors will have a big volume of work coming up in the next few months.

The $12-million Maryland State Office Center is out for bids that will be opened Nov. 29. This state building is in a redevelopment tract just northwest of downtown Baltimore.

This is just part of the city's growing urban renewal program now in the process of being consolidated under one administrative agency. This agency will push a 20-year, $900-million program.

Bids are due Nov. 20 on the Lexington Terrace public housing project, which will consist of five high-rise and 13 two-story buildings containing a total of 677 dwelling units.

These are immediate projects. Following them in a month or two will be some $4 million worth of shopping centers and apartments in two other redevelopment areas.

The federal government is planning a $17-million office center that will be integrated with the urban renewal program.

But urban renewal is not the only star in the Baltimore galaxy. Around the first of the year, the Maryland Roads Commission will let contracts for $20 million in highway improvements financed under the new federal highway bill. Much of this work will be done in the Baltimore area, chiefly in connection with the circumferential route around the city. This route will tie in with the Patapsco River crossing which will be opened in December 1957.

The city government is moving along on the new $70-million Jones Falls Expressway, which will be Baltimore's main north-south artery when completed. Planners also are going ahead on a proposed east-west expressway, eight lanes wide, across the city's midriff.

Commercial building continues strong, particularly in the shopping center field. Industrial building is setting new records, according to the Baltimore Association of Commerce. This type of work is boosted by Bethlehem's $200-million expansion at Sparrows Point and the new $20,-million Glidden Co. project.

This leaves housing, where small builders are being hurt. Tight money has driven away many potential buyers. But many builders are counting on this potential for the future.

Some think the slowdown in housing might be good. It will force homebuilders to turn out better homes to lure those buyers who can afford bigger downpayments and higher interest rates.

One of the city's largest suppliers of earthmoving equipment cautions against pessimism. His firm sells equipment to grading subcontractors, many of whom work for the small homebuilders.

"A year ago," he says, "the contractors were paying these subs regularly and my customers were paying off their debts. Now, many subcontractors are asking for a little more time to pay off their notes. They say the contractors they work for are having hard times.

"But, remember one thing: Even though these boys might be slowing down on their payments, they still are buying equipment. In fact, our sales this year are ahead of 1955. So long as these men feel they can go ahead, things look pretty good for the future of this market."

Philadelphia Development Corporation, has requested a charter and hopes to get under way officially in the immediate future.

Endowed with quasi-official standing, this privately-financed organization will co-operate with the Philadelphia Planning Commission and the Philadelphia Redevelopment Authority.

The $250 million renewal program will be concentrated in the midtown and fringe areas between Spring Garden, Lombard, and Broad Streets and the Delaware River.

Through private financing, and federal grants (channeled through the redevelopment authority), the new corporation will serve as primary redeveloper. Specific projects will be carried out by private investors and builders in accordance with a comprehensive plan drawn by the City Planning Commission.

A group of architects already is at work, under a contract with the City Planning Commission, to develop the general outline of the program, according to Albert M. Greenfield, commission chairman.

Plans call for complete demolition of the old Dock Street wholesale market district, a renovation of Franklin Square and restoration of about 400 historic homes in the redevelopment area.

Private homes, apartment buildings and perhaps hotels will be built on these razed sites.

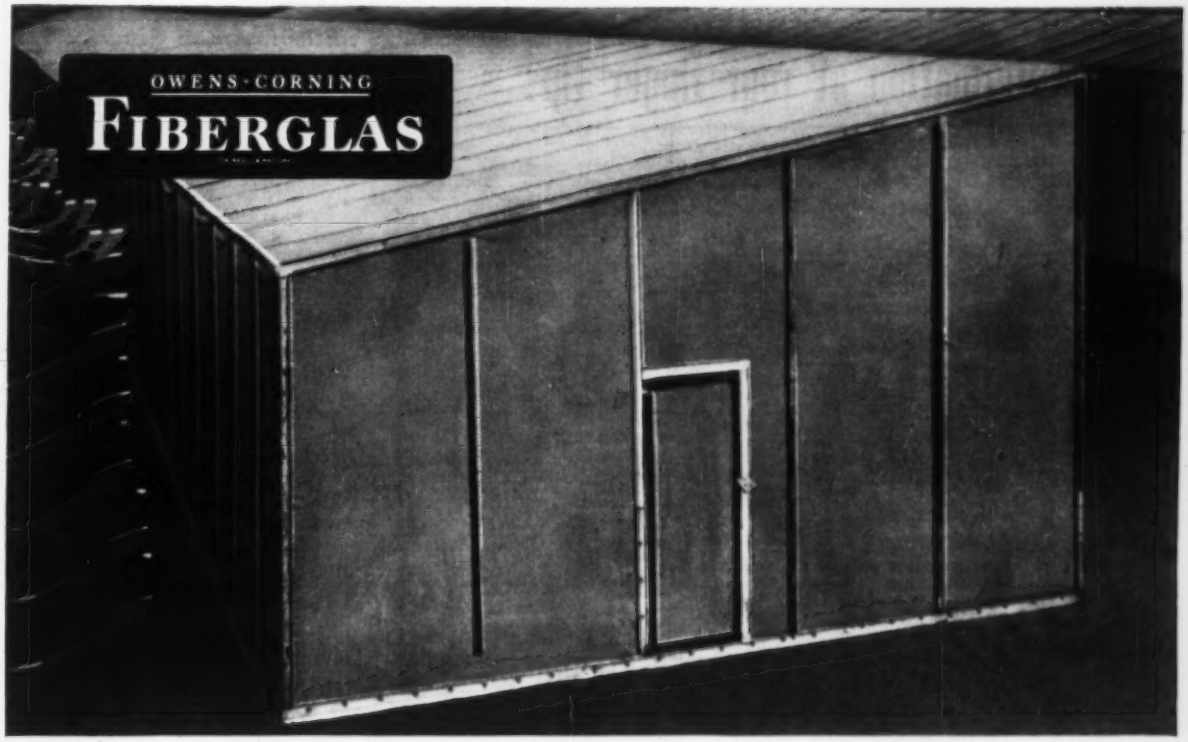
The program also calls for improvements along Market Street, site of most of Philadelphia's big department stores and of many of its commercial retail establishments, from Front Street, near the Delaware River waterfront, up to 10th Street.

The corporation, although organized as a private body, will have some of the powers of the present Development Authority and thus will be able to aid private institutions, such as Jefferson Hospital, in plans for new residences for nurses and internes.

Planning Chairman Albert Greenfield calls the program, "the most ambitious city redevelopment program in the country." He emphasized that private builders will be encouraged to undertake as many projects as possible, with the new non-profit corporation handling only work private enterprise cannot do.

William L. Day, chairman of the board of the First Pennsylvania Banking and Trust Co., is president of the Old Philadelphia Development Corporation. Other officers named so far are Paul Ingersoll, assistant secretary of the Penn Mutual Life Insurance Co., secretary; and James J. Mickley, vice president of the Girard Trust Corn Exchange Bank, treasurer.

(*B & F continued on page 112*)



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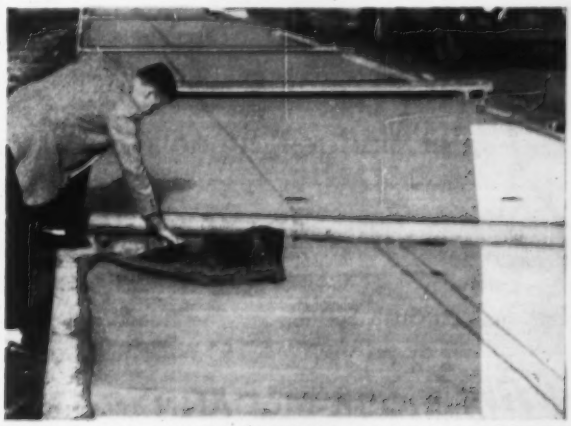

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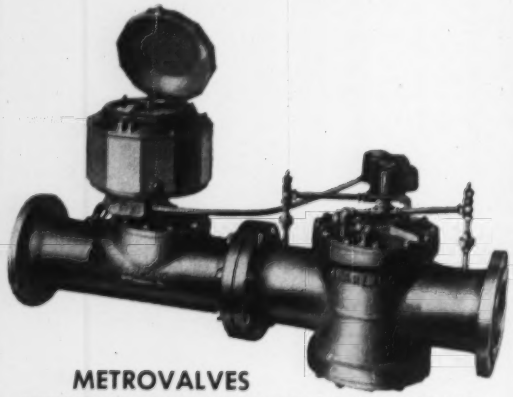

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85 Industrial St.....SAN FRANCISCO 24
904-A Elliott Ave. West.....SEATTLE 99
207 Queens Quay West.....TORONTO, CAN.
248 London Rd.....ROMFORD, ENGLAND

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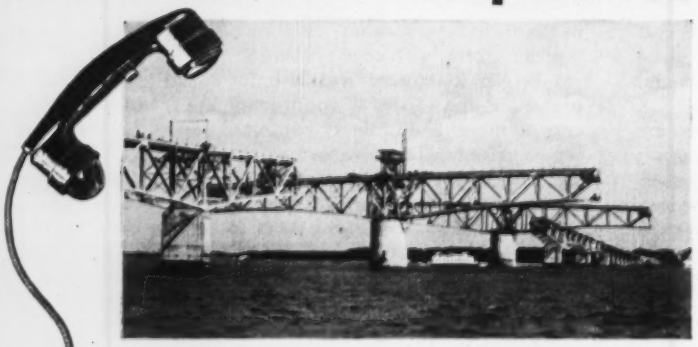

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Business Briefs . . .

• **Aluminum catches up**—The aluminum industry's "prodigious" efforts to increase production are paying off, according to I. W. Wilson, president of Aluminum Company of America. Now the industry should concentrate on developing new markets. Two viewed by Wilson: residential building uses and highway applications.

• **Million homes in '57**—On the eve of the U. S. Savings and Loan League's annual convention, League President Walter H. Dreier reported, "the worst of the decline in new homebuilding is behind us," predicted 1 million housing starts in 1957.

• **Industrious homebuilder**—Development of a 320-acre industrial site has been projected at Phoenix, Ariz., by John F. Long, who for the past eight years has concentrated on residential construction in central Arizona. Long has built more than 3,000 homes. Now, he plans the industrial area near his subdivisions, will try for electronics and other light manufacturing firms.

• **State office buildings**—The Florida State Cabinet authorized issuance of separate bond issues totaling $9 million for construction of branch state office buildings in Jacksonville, Tampa, Miami and Winter Park. Agencies using the buildings will pay rentals that will be used to retire the bonds.

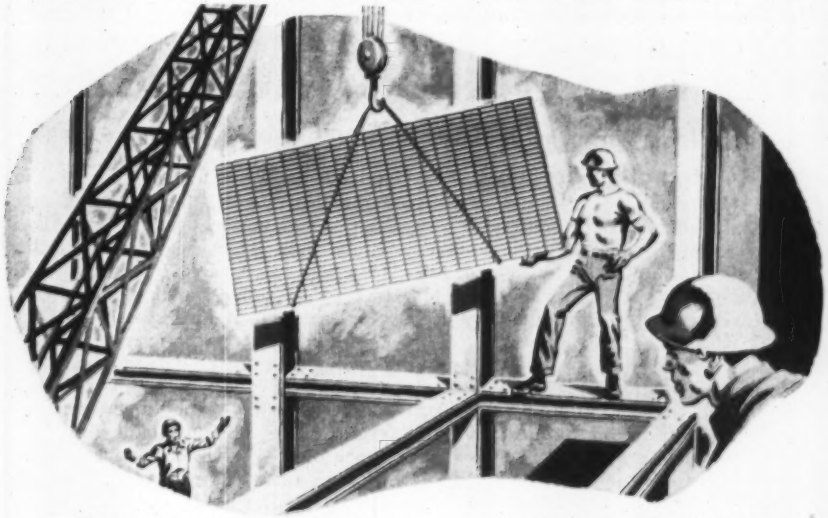
• **Paying proposition**—F. H. McGraw & Co., engineers and constructors, had good news for stockholders. Directors declared a 15 cents a share dividend payable Dec. 18, and announced the common stock has been placed on a regular quarterly dividend basis. Construction completed during the first nine months totaled $16 million, and produced a net profit, after taxes, of $303,247—equal to 71 cents per common share. This compared with a net loss of $217,000 during the same period in 1955.

• **Equipment merger**—Chain Belt Co., of Milwaukee, Wis., acquired General Road Machines, Inc., of Niles and Newton Falls, Ohio. General Road, which will operate as a subsidiary of Chain Belt, is a manufacturer of road-building equipment.

• **Cleveland Trencher sales up**—Cleveland Trencher Co.'s sales for the first nine months were up slightly over the same period in 1955 ($5.5 million vs. $5.3 million), but net profit was down slightly.

• **Higher interest—later**—Interest rates will move higher, but there won't be any significant rise for the balance of this year, according to Fred F. Florence, president of the American Bankers Assn.

BUILDING?



- INDUSTRIAL PLANTS
- POWER HOUSES
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Teamsters' Aim: Two Million Members

Construction and industrial workers loom large in union's plans to add new members and to strengthen its position

Teamster plans to push the union's membership past the two million members mark will reach into the heavy and highway construction field and perhaps will compound the confusion already surrounding the conflicting jurisdictional claims of craft and industrial unions.

Membership drives for construction workers have been mapped for Virginia, West Virginia and western Pennsylvania, Philadelphia, Washington, D. C., and Baltimore. The drives will be financed jointly by the locals and the international. Principal target is an independent union—A. D. Lewis' United Construction Workers, which is part of John L. Lewis' United Mine Workers. And along with the drive, greater emphasis is promised on mutual assistance pacts, on area-wide bargaining and on uniform agreements.

These were some of the topics on the agenda at the annual convention of the Eastern Conference of Teamsters, recently held in Washington, D. C.

According to the conference's Building and Construction Division, the teamster's four-way pact with laborers, carpenters and operating engineers (ENR July 26, p. 105) is functioning well, but UCW still remains a threat in several sections of the conference area. The pact, signed two years ago and aimed at UCW and nonunion contractors, contains a pledge by the four unions not to engage in jurisdictional work stoppages at projects on which their members are employed—a pledge based on the premise that unity among the trades and cooperation with union contractors will lead to greater employment opportunities for members of the participating unions. Out of that alliance came the National Joint Heavy and Highway Construction Committee, which, incidentally, was instrumental in getting the prevailing wage provisions put in the Federal-Aid Highway Act of 1956.

As a collateral effort to strengthen their own position, particularly in the field of collective bargaining, teamster locals within the conference are being urged by the Building and Construction Division to negotiate jointly on an area-wide basis and to make greater use of standard provisions in building and construction labor contracts. The activities of the division are now under the direction of Anthony Capone, former business representative of Building Material and Construction Local 398, Rochester, N. Y.

But perhaps the most dramatic proposal presented at the convention was formation of an industrial division within the teamsters union. The proposal came from Union Vice President and Central Conference Chairman James Hoffa, who expressed the view that no ready solution to the jurisdictional conflict between craft and industrial unions will come out of the AFL-CIO. Apparently on the theory that a bird in the hand is worth two in the bush, Hoffa suggested that the teamsters meanwhile proceed intensively to organize workers in industrial plants on an industry basis without regard to craft restrictions.

Now one of the largest and most vigorous of the AFL-CIO affiliates, Beck's teamsters claim a membership in excess of 1.4 million and report a net worth of $36.5 million. About 425,000 of the union's members are in the Eastern Conference area.

How Labor Interprets the Election Results

Organized labor last week attributed President Eisenhower's victory at the polls to the President's personal popularity, not to the Republican program or to the failure of labor's political activity.

It claimed some credit for the heavy vote splitting that occurred and for the election of many gubernatorial and Congressional candidates considered friendly to labor. And to some observers labor scored a victory in the rejection by popular vote of a right-to-work law in Washington and in the defeat of Warren Shaw, a proponent of right-to-work legislation who ran for Governor of Kansas on the Republican ticket.

Last week's Presidential election was the first in which labor had behind it the weight of the new AFL-CIO combination.

While Stevenson and Kefauver had received the endorsement of the federation and of a host of individual unions, President Eisenhower, however, had won the personal support of some of the leaders of the AFL-CIO building trades. Among them were Richard Gray, head of the Building and Construction Trades Department; Maurice A. Hutcheson, president of the carpenters union, and Dave Beck, president of the teamsters union.

Labor endorsement of other candidates, on both state and national levels, had followed recommendations made on a nonpartisan basis by the AFL-CIO's Committee on Political Education, which had analyzed and widely publicized the voting records of political candidates.

AFL-CIO President George Meany, who has said that labor's biggest challenge lies in the legislative halls, attributed the fact that Congress remained Democratic despite President Eisenhower's record margin "in large part to the educational work of labor" and said the election results gave labor "renewed hope" for a predominantly liberal and progressive Congress in 1958.

Atom Plant Opposed

Building trades ask veto of union request to halt construction in Michigan

Union efforts to halt construction of the $45-million atomic energy facility being built at Lagoona Beach, Monroe, Mich., have been opposed by the Monroe County Building Trades Council. The attempt to suspend construction was spearheaded by Walter Reuther, head of the auto workers union, and reportedly stemmed from a fear that the installation would endanger the health and safety of those living in the Detroit and Toledo areas.

The plant, on which United Engineers and Constructors of Philadelphia is one of the contractors, is being built for Power Reactor Development Co. under a conditional construction permit issued by the Atomic Energy Commission. Three unions—auto workers, electrical workers (IUE) and paperworkers—have asked the AEC to order suspension of construction pending investigation of the safety hazards involved.

(*Continued from page 114*)

Claiming that the installation is an "unproved and exceptionally hazardous type of reactor," the three unions have taken the position that the AEC did not find that the plant could be constructed and operated "without undue risk to the health and safety of the public" and that the construction permit should not have been issued in the absence of such a finding. The Building Trades Council in Monroe already has urged that construction not be suspended and looks to the Toledo Building Trades Council for similar support.

An AEC hearing on the safety issue, originally scheduled for this week, was postponed to Dec. 10. Meanwhile, the AEC has declined to order a halt to construction. Ten acres of land already have been filled preparatory to construction, and pouring of concrete for the footings was expected to begin last week.

Contractors' Problem

AGC official claims labor keeps building costs high

The president of the Carolinas Branch of the Associated General Contractors of America has blamed increased construction costs on the "backward thinking" of labor union officials.

Speaking at the annual meeting of the North Carolina Ready Mixed Concrete Association at Pinehurst, N. C., Frank P. Morris said the main problem of builders today is to convince organized labor that it should bring its thinking up to date. "Labor," he said, "is one of the biggest costs in any construction project, yet labor officials are constantly trying to increase labor costs without increasing efficiency."

To support his charge that labor attempts "to halt cost-cutting progress," Morris cited use of pumps and air compressors as examples.

Organized labor insists, he said, that "contractors hire one man to push the button in the morning to start the pump and compressors and again at night to shut them off. Not only do labor officials want that man to sit there idle all day, they want him to make more money for doing it."

"These backward thinking officials," Morris asserted, "are merely pied pipers who are leading the honest working man to his destruction."

(*Labor continued on page 117*)

MODERN STRUCTURES

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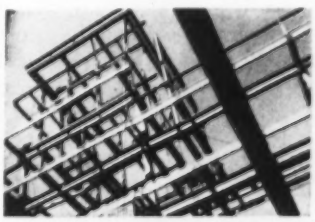

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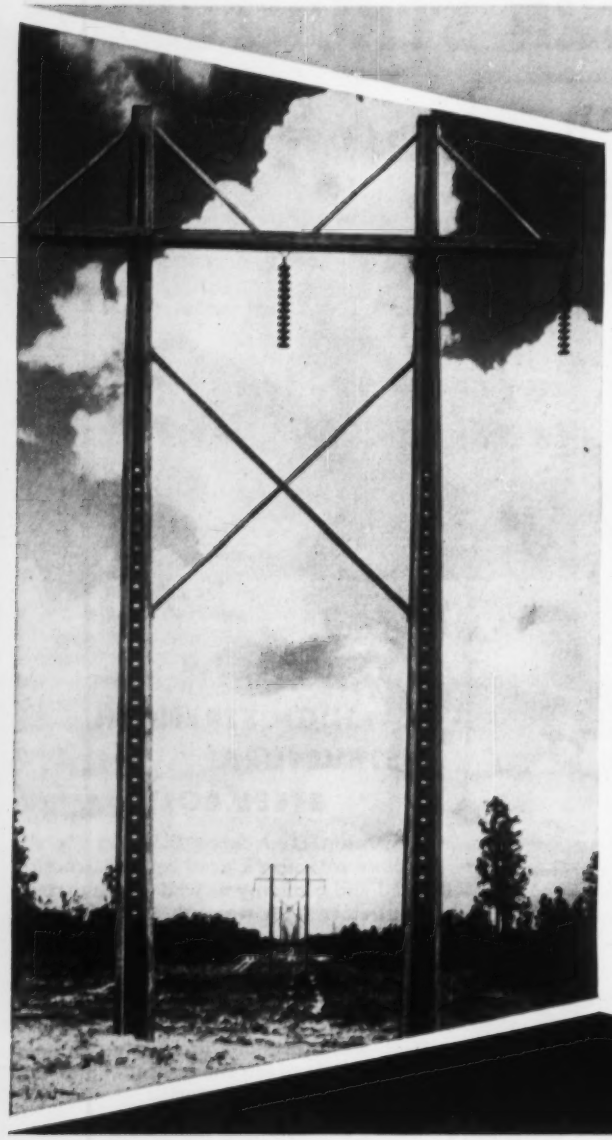

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Shown here is one of the latest in the constantly growing list of applications for prestressed concrete. These power line poles were designed and fabricated for the Florida Power Corporation by Finfrock Industries, Inc., Orlando, Florida.

Each pole is prestressed with ⅜" diameter Roebling uncoated 7-wire stress-relieved strands, pretensioned and bonded to the concrete.

Easily transported and installed, the 65 ft (above ground) poles have a life expectancy of 50 to 100 years. Once erected, they are maintenance-free. The high cost of replacement every few years is eliminated.

Why don't you investigate the possibilities of this new market to increase your profits? Roebling engineers, who pioneered in the development of prestressed concrete in America, will supply general information or help with specific problems. Write to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, N. J.

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AFL-CIO Housing Proposals

Labor asks federal government to redirect homebuilding activity with emphasis on low and middle-income needs

In its current issue of "Labor's Economic Review," the AFL-CIO presents its recommendations for a "far-reaching, comprehensive housing program" embracing construction of at least 2 million new dwelling units a year to help close up the gap between "housing construction and housing requirements."

If the housing program, directed primarily at the needs of low and middle-income families, were adopted by Congress, payment of prevailing wages would be required on all forms of federally-assisted construction. Here's what the program calls for:

- A Department of Housing and Urban Affairs headed by a cabinet officer.
- A National Mortgage Corporation authorized to make long-term, low-interest loans for cooperative, sales and non-profit rental housing for moderate-income families.
- A large-scale, low-rent public housing program for low-income families.
- A federal program of low-cost loans to unions, churches, cooperatives and other non-profit organizations for sponsoring special housing programs for the elderly.
- An expanded urban redevelopment program with emphasis on slum clearance and city rebuilding.
- Payment of prevailing wages on all federally-assisted housing construction.
- Protection of home owners against foreclosure when unemployed because of lay-offs, accidents and illness.

According to the AFL-CIO, our housing programs never have been successful because they haven't generated enough construction to keep pace with the nation's needs and because they've failed to produce housing at costs most people can afford.

• **Vicious circle**—Only one new home, the federation asserts, is being built for every two that are needed.

A rapid rise in population (43% in the last 20 years) and deterioration of older housing units have combined, the AFL-CIO says, to give the nation a homebuilding rate, on a per capita basis, that's 20% less than it was in 1925. And the demand for housing will grow more urgent as demolition spreads in the vanguard of highway and public works construction.

In the face of these trends, the AFL-CIO charges, tight credit conditions and higher home prices are forcing more and more people out of the housing market. Even the VA and FHA programs, the federation argues, call for higher carrying charges than most moderate-income families can afford. Here, the complaints are that interest rates are unreasonably high in view of the fact that the lender's risk virtually has been eliminated, extra costs are numerous, and the loans are too quickly amortized.

At the same time, continued the AFL-CIO, older citizens, whose housing needs have been overlooked in the past, are growing more numerous and forming a larger proportion of our population.

• **Solution**—To the AFL-CIO the solution is a fundamental redirection of homebuilding activity spearheaded by the federal government along the lines proposed, with new units made available to all races and creeds without discrimination.

Parts of the program were contained in bills presented to the 84th Congress by Sen. Herbert Lehman (D., N.Y.) and Rep. Albert Rains (D., Ala.) but neither bill was passed.

The AFL-CIO expresses the hope that the next session of Congress will consider solution to the housing problem one of its major objectives.

Labor Unity Shows Gains As State Mergers Proceed

Tentative agreement has been reached on merger of AFL and CIO forces in North Carolina. In the meantime, state mergers have been completed in New Mexico and Alabama.

The North Carolina agreement was reached by a negotiating committee that has attempted to overcome merger objections voiced by the AFL last August when the building trades blocked the merger. (ENR Aug. 30, p. 77). According to W. Millard Barbee, head of the State Federation of Labor, the new proposal is "generally satisfactory" to both groups. Next step will be ratification of the proposal.

The New Mexico and Alabama mergers, embracing 375,000 AFL-CIO members, brought to 18 the number of state mergers that have been completed. Right-to-work laws were singled out for attack at both merger conventions.

State mergers, which must be completed by Dec. 5, 1957, are an integral part of the unity movement that founded the AFL-CIO last year. Unity "is working" despite its problems AFL-CIO George Meany told delegates to the recent convention of ironworkers, and "good faith" will continue to be the key to its success, he said.

Lathers and Employers End Dispute Over Labor Supply

A Chicago dispute over employment practices of union lathers was settled last week after seriously hampering construction activities for three weeks. Under a new agreement, running until June 1, 1958, between the Chicago Plasterers Association and Local 74, a Joint Manpower Commission will be established to study ways and means of keeping the labor supply adequate.

During the dispute (ENR, Oct. 25, p. 114), the lathers were charged with restrictive employment practices with respect to admission of new members, enrollment of apprentices and the use of outside union lathers and of nonunion workers.

Terms of the settlement will permit outside journeymen to be employed in Chicago, with the approval of the Joint Manpower Commission, when needed. Problems of apprentice training and overtime work will be dealt with by two committees slated to be formed under the settlement agreement.

Organizing Agreement Is Reached in Hawaii

A jurisdictional dispute over organization of the trowel trades in Hawaii has been ironed out as AFL-CIO efforts continue to extend the trade union movement in the islands.

Under the agreement, plasterers and cement masons will be organized by Arthur A. Rutledge, head of the teamsters and hotel workers local in Hawaii. Bricklayers and tile setters, whom Rutledge had previously claimed (ENR Oct. 4, p. 148), will remain within the jurisdiction of the bricklayers union, which has assigned the task of organizing to Will C. Jarrett.

Other membership drives previously launched include one by the painters and one by the carpenters.

Carpenters Union Supports Lumber Industry Promotion

The carpenters union, which is celebrating its 75th anniversary this year, has promised close cooperation with the lumber industry in promoting use of

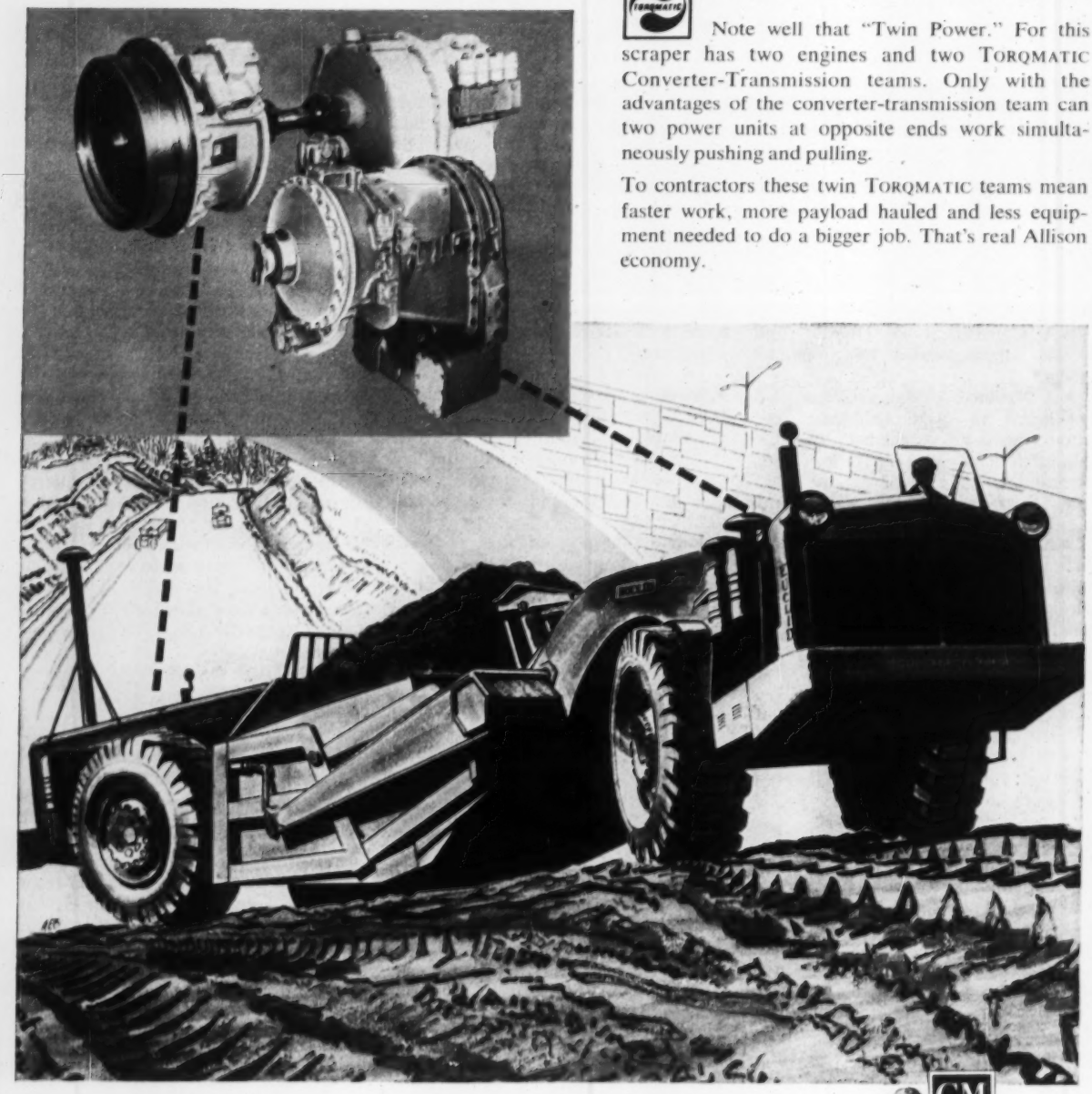
(Continued on page 119)

Both ends working against the highway muddle

Allison TORQMATIC DRIVES make it possible for this big Euclid TS-18 *Twin Power* scraper to "eat up hills" and build a highway.

Note well that "Twin Power." For this scraper has two engines and two TORQMATIC Converter-Transmission teams. Only with the advantages of the converter-transmission team can two power units at opposite ends work simultaneously pushing and pulling.

To contractors these twin TORQMATIC teams mean faster work, more payload hauled and less equipment needed to do a bigger job. That's real Allison economy.



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TORQMATIC DRIVES

wood products. Promise came from union President Murice A. Hutcheson when he spoke last week to the Building Codes and Trade Promotion Committee of the National Lumber Manufacturers Association in Washington, D. C.

One of the main objectives of the joint promotional activity, Hutcheson indicated, should be amendment of building codes to promote wider use of wood products. "We need," he said, "up-to-date codes which recognize all the improvements in both product and technique in wood construction in the past 50 years." Hutcheson also included reduced insurance rates on wood construction and maintenance of "realistic" controls over the import of plywood and other wood products among the goals of the cooperative effort.

In offering the lumber industry the support of the carpenters union, Hutcheson said the primary concern of his union is to improve the lot of its members and to promote the national welfare. The union, he asserted, is not interested in "Utopia" ideas or in "isms."

Labor Briefs . . .

• **Prevailing wages**—The right of the City of Philadelphia to require contractors to pay employees "no less than the wages prevailing in the community" has been upheld by a state court. Payment of prevailing wages, said the court, is a "reasonable" requirement.

• **Industrial contracts**—An arbitrator handling a grievance of the United Rubber Workers union has ruled that an industrial concern must live up to a provision in its labor contract restricting use of outside contractors. If the contract requires the work be done by plant employees where "possible and practical," the clause means what it says.

• **Higher benefits**—In drafting the California State Federation of Labor's 1957 state legislative program, the federation's Executive Council will ask for higher workmen's compensation benefits, and larger unemployment insurance and unemployment disability insurance benefits.

• **Safety**—As a result of the collapse of the partially constructed Consumers Power Co. building near Jackson, Mich., on Oct. 3, the Michigan Conference of Building Trades Councils may call a legislative conference in Lansing to try to push an adequate safety code bill through the state legislature.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: November 27, 1956.

Municipal Airport Lighting System Ogdensburg, New York

NOTICE TO BIDDERS

Sealed proposals for furnishing all labor, equipment and material and appurtenances for electrical improvements to the Municipal Airport of the City of Ogdensburg, New York, until 2:00 P. M., Eastern Standard Time, on Tuesday, November 27, 1956 at the Common Council Room in the City Hall, Ogdensburg, New York at which time they will be publicly opened and read aloud.

Bids will be taken on the following contract:

Installation of runway and taxiway lights, wind cone, beacon and beacon platform, hangar lights and electric service.

The information for Bidders, Proposal, General Provisions, Special Provisions, Specifications and Plans, Form of Contract and Performance Bond may be examined at the Office of the City Clerk, Ogdensburg, New York, and copies thereof may be obtained from William T. Field, Consulting Engineer, 320 Flower Building, Watertown, New York upon the payment of Thirty ($30.00) Dollars for each set.

The City of Ogdensburg reserves the right to waive any information in or to reject any of all bids or to accept any bid that it deems, to be in the best interest of the city.

The acceptance of any bid is subject to the approval of the Civil Aeronautics Administration.

Each bidder must deposit with his bid, security in the amount of not less than five per centum (5%) of the bid in the form and subject to the conditions provided for in the Information for Bidders.

The successful bidder will be required to furnish a contract performance bond in such form and having as surety thereon such surety company or companies as are approved by the City Corporation Counsel, in the amount of not less than 50% of the total amount of the accepted bid.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under this contract.

Dated: October 25, 1956.

CITY OF OGDENSBURG, NEW YORK
LEE W. KEYES, MAYOR

WILLIAM T. FIELD
Consulting Engineer
Watertown, N. Y.

Bids: November 30, 1956.

Construction of 16-inch and 30-inch Diameter Water Supply Mains Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of 16-inch and 30-inch diameter water supply main, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M., Eastern Standard Time, on Nov. 30, 1956, and there publicly opened and read immediately thereafter:

STAGE II
CONTRACT 4
CONSTRUCTION OF 16-INCH AND 30-INCH DIAMETER WATER SUPPLY MAIN AND APPURTENANCES.

1. Location: The work is located in Arlington County, Virginia, on public streets from 30th Street N. to Yorktown Boulevard, along Yorktown Boulevard to N. Vermont Street and N. Vernon Street, along N. Vernon Street to 24th Street N. and on 24th Street N. to Wakefield Street (30 inch Water Supply Main) and on 24th Street N. from Wakefield Street to Old Dominion Drive and 26th Street. (16 inch Water Supply Main)

2. Type of Work: The principal items of work include the following:

Approximately 4400 lin. ft. of 30-inch steel or reinforced concrete water pipe together with manholes, cone valves, miscellaneous, blow-off, air release or inlet valves, connections to existing water mains, etc.

Approximately 1700 lin. feet of 16-inch cast iron water pipe, together with miscellaneous gate valves, manholes, hydrants, connections to existing mains, etc.

Approximately 1000 lin. ft. of 24-inch concrete storm sewers and appurtenances.

3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7), N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bids within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

Bids: December 4, 1956.

Contract Exd-120.065

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
FOURTEENTH FLOOR ALTERATIONS
NORTH SIDE

Sealed proposals for altering a portion of the north side of the fourteenth floor of the Port Authority Building, 111 Eighth Avenue, New York 11, N. Y., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, December 4, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 15, 1956

OFFICIAL PROPOSALS

Bids: November 30, 1956.

Construction of a Steel Water Tank

ADVERTISEMENT FOR BIDS
FURNISHING AND ERECTING
ELEVATED STEEL WATER STORAGE
TANK, 500,000 GALLON CAPACITY
ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all material and equipment and doing all work required for the furnishing and erecting of an elevated steel water storage tank, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A. M., Eastern Standard Time, on NOVEMBER 30, 1956, and there publicly opened and read immediately thereafter:
CONTRACT 5.
FURNISHING AND ERECTING ELEVATED STEEL WATER STORAGE TANK
500,000 GALLON CAPACITY

1. Location: The work is located in Arlington County, Virginia, on County Owner property at N. Wakefield Street and 24th Street N.

2. Type of Work: The principal items of work include the following:-
Furnishing and erecting a 500,000 Gallon Elevated Steel Water Storage Tank complete with all accessories, including Obstruction Lighting and Cathodic Protection.

3. Copies of Plans and Specifications, Information for Bidders, Bid Form and other Bidding and Contract Documents may be examined at the Office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia, upon Deposit of TEN ($10.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other Sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) Percent of the Deposit. No refund will be made for return of documents in poor condition or later than the two-week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in an amount of not less than Five Per Cent (5%) of the amount of the Bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

Bids: December 20, 1956

Port of Corinto, Nicaragua, C.A.

FURNISHING AND DELIVERING
MATERIALS HANDLING EQUIPMENT
AUTORIDAD PORTUARIA DE CORINTO
MANAGUA NICARAGUA

Sealed bids in triplicate for Furnishing and Delivering Materials Handling Equipment, Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4° Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on December 20, 1956, at which time the bids will be opened.

The work consists of designing, manufacturing, testing, furnishing and delivering gasoline or diesel powered materials handling equipment, including the following general types:

14 Fork Lift Trucks, Cushion Tired—5,000 lb. capacity
2 Fork Lift Trucks, Pneumatic Tired—16,000 lb. capacity
1 Straddle Truck, Pneumatic Tired—18,000 lb. capacity
5 Tractors Warehouse, Cushion Tired—500 lb. drawbar pull
3 Tractors Warehouse, Cushion Tired—2,600 lb. drawbar pull
1 Crane, mobile-single engine pneumatic tired with 30 foot boom and minimum capacity of 14,000 lbs. on 10' radius
1 Crane, mobile-single engine pneumatic tired with 50 foot boom and minimum capacity of 25,000 lbs. on 15 foot radius
80 Trailers, warehouse-pneumatic tired, 72" x 108", 5000 pound capacity.
6 Trailers, heavy duty cushion-tired 84" x 204", 50,000 pound capacity.
1500 Pallets, hardwood, 4 way non reversible 48" x 72".

Spare parts sufficient for two years operation of the equipment listed above.

Contract Documents including specifications may be obtained from the Autoridad upon payment of Seventy Córdobas per complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City, and at the New York offices of Tippetts-Abbett-McCarthy-Stratton, Engineers.

The Authority reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad or bid bond satisfactory to the Autoridad, in the amount of five (5) per-cent of the total bid price, in Córdobas. The total bid price in Córdobas shall be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.
AUTORIDAD PORTUARIA DE CORINTO
Managua, Nicaragua

Bids: December 11, 1956.

Contract LT-160.024

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
THIRD TUBE
TUNNEL PAVING

Sealed proposals for the tunnel paving for the Third Tube of the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, until 2:30 P.M. on Tuesday, December 11, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.
THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, November 15, 1956

Bids: December 11, 1956.

Contract PN-340.005

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 290, 291, 292 and WHARF
RECONSTRUCTION OF WHARF

Sealed proposals for the reconstruction of a wharf on the North side of the City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P. M. on Tuesday, December 11, 1956, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.
THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, November 15, 1956

Bids: January 23, 1957

Government of Iraq

MINISTRY OF ECONOMICS
TOBACCO MONOPOLY
ADMINISTRATION
CIGARETTE FACTORY AT
SULAYMANIYAH

1. The TOBACCO MONOPOLY ADMINISTRATION of the Government of IRAQ invites tenders for furnishing and delivering, all machinery and equipment required for an airconditioned Cigarette Factory at Sulaymaniyah, Iraq, and supervising the installation and the satisfactory operation of the Factory for a period of 12 calendar months, in accordance with specifications, conditions and addenda.

2. Copies of the documents for tender may be inspected at the following adresses on or after 25 October 1956.

a) The offices of the Director General, Tobacco Monopoly Administration, Baghdad, Iraq.

b) Iraq Embassies in Washington, London, and Paris; and Iraq Legations in Bonn, Brussels, and Rome.

3. Copies of the documents for tender may be obtained on or after 25 Oct. 1956 upon payment of I.D. 25/-(Twenty-five Iraqi Dinars) from the offices of the Director General, Tobacco Monopoly Administration, Baghdad, Iraq.

4. Tenders must be written in English, and shall be enclosed in a sealed package and endorsed clearly on the outside with the words "Tender for Cigarette Factory at Sulaymaniyah". They shall be addressed to the Director General, Tobacco Monopoly Administration, Baghdad, Iraq, and delivered on or before 12 noon, Baghdad time, 23 January 1957. If sent by post, the tenders shall be registered, but the tenderers must assure themselves of delivery to the Director General in due time.

5. The tender must be accompanied by a bid bond of ID.10,000 (Ten thousand Iraqi Dinars). The bid bond shall be in the form of a certified cheque from a bank in Iraq, or the bidder may submit with his bid, a letter of guarantee obtained from a bank established in Iraq. The bid bond is returnable subject to the conditions mentioned in the specifications.

6. Tenders not submitted in the time specified or not accompanied by the bid bond will not be considered.

7. The Director General reserves the right to amend the documents. Any amendments will be in the form of addenda and shall be distributed to the prospective tenderers, in time to be included in the tender.

8. The Tobacco Monopoly Administration does not bind itself to accept the lowest or any tender.

BAQIR H. HASANI,
DIRECTOR GENERAL AND CHAIRMAN
OF BOARD OF DIRECTORS
TOBACCO MONOPOLY
ADMINISTRATION

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS

Bids: January 22, 1957

Port of Corinto, Nicaragua, C.A.

PORT CONSTRUCTION—PHASE I
PORT CONSTRUCTION—PHASE II
AUTORIDAD PORTUARIA DE CORINTO
MANAGUA, NICARAGUA

Sealed bids in triplicate for Port Construction, Phase I and II, at the Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad, Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4° Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on January 22, 1957, at which time the bids will be opened.

Phase I of the work consists of the construction of a new wharf approximately 370 meters long, including dredging and disposal of dredged materials; furnishing and placing rock and sand fill, riprap and filter blankets; furnishing and placing concrete piles and concrete deck structure; furnishing and installing timber fendering; and furnishing and installing deck fittings and track work. Listed below are the estimated qualities for the principle items of work.

85,000 C.M.	Dredging
46,000 Metric Tons	Rock Fill
139,000 C.M.	Sand Fill
26,000 L.M.	Reinforced Concrete Pile
5,000 C.M.	Concrete

Phase II of the work consists generally of the following construction: 1) Two transit sheds approximately 50 meters wide and 117 meters long; a pump house approximately 3.8 meters wide and 5.0 meters long; and a truck service shelter approximately 9.1 meters wide by 17.4 meters long; all steel frame structures with protected metal roofing and siding. 2) A guard house approximately 3.7 meters square, of concrete unit masonry construction with concrete roof and built up roofing. 3) Masonry and steel partitions; overhead steel and hollow metal doors; commercial projected steel windows; plumbing; sprinkler systems; electrical work, painting and miscellaneous incidental items of work for the building structures. 4) Fire pump and fuel tank; fuel dispensing units and storage tanks and interconnecting piping. 5) Water tower for fire protection system and standby pump. 6) Utilities, including fire and domestic water mains, sanitary waste and storm drainage, and electrical distribution. 7) Reinforced concrete paving of port area and railroad track work.

Separate Contract Documents including plans and specifications have been prepared for Phase I and for Phase II and may be obtained from the Autoridad upon payment of One Hundred and Seventy Five Cordobas for each separate complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City and at the New York offices of Tippetts-Abbett-McCarthy-Stratton Engineers.

Bids may be submitted for Phase I, Phase II, or both combined. A separate proposal form is provided for the combined bid.

The Autoridad reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad, or bid bond satisfactory to the Autoridad, in the amount of two (2) percent of the total price in Cordobas.

The total bid price in Córdobas will be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.

AUTORIDAD PORTUARIA DE CORINTO
Mangua, Nicaragua

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

COMMONWEALTH OF MASSACHUSETTS: Department of Public Works. NOTICE TO CONTRACTORS: Sealed proposals for State Highway and Bridge Work on Auto Route 6 in the Towns of MARION and WAREHAM will be received at Room 427, 100 Nashua Street, Boston, Mass., until 2.00 P.M. of TUESDAY, November 20, 1956 and at that place and time publicly opened and read. Proposal guaranty: $20,000.00. Charge for plans and proposal forms: $15.00, amount returnable only to bidders. Complete information at said office; plans on display at District office in MIDLEBOROUGH. Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work.
B: CARL A. SHERIDAN, Commissioner of Public Works. November 3, 1956

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4803) will be received at Weaverville, California, until December 20, 1956, for furnishing labor and materials for Clear Creek Tunnel, Trinity River Division, Central Valley Project, California. Location near Redding, California. Principal items are 150,000 cu. yds. open cut excavation; 675,000 cu. yds. excavation in tunnel; 8,000,000 lbs. furnishing and installing steel tunnel supports; 175,000 cu. yds. concrete; 14,500,000 lbs. furnishing and placing reinforcement bars; and other work. Completion time 1,720 days. For particulars, address Bureau of Reclamation, Weaverville, California, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4798) will be received at Building 234, Camp White, Oregon, until December 18, 1956, for furnishing labor and materials for Earthwork, Concrete Canal Lining, and Structures for Howard Prairie Delivery Canal, Station 0+09 to Station 541+00, and Soda Creek Feeder Canal, Talent Division, Rogue River Basin Project, Oregon. Location east of Ashland, Oregon. Principal items are 194,000 cu. yds. excavation; 23,400 cu. yds. compacting embankments; 8,560 cu. yds. concrete in structures and lining; 2,760 lin. ft. 48-inch precast-concrete pipe siphon; and other work. Completion time 690 days. For particulars, address Bureau of Reclamation, P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4804) will be received at Weaverville, California, until December 19, 1956, for furnishing labor and materials for Earthwork, Structures and Surfacing, County Road Improvement, Trinity River Bridge to Trinity Dam, Central Valley Project, California. Location near Lewiston, California. Principal items are 750,000 cu. yds. excavation for roadway; 4,670 lin. ft. furnishing and laying 8-inch to 60-inch corrugated metal pipe; 35,000 tons crushed rock base; 260 tons liquid asphalt; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Project Construction Engineer, Weaverville, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4805) will be received at Denver, Colorado, until December 20, 1956, for furnishing materials for a steel warehouse, 100-feet wide by 320-feet long, for Glen Canyon Dam and Power Plant, Colorado River Storage Project, Arizona-Utah. Delivery is desired within 150 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: November 27, 1956

Contract 439

MARGARETVILLE-ARKVILLE SEWERS

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Standard Time on Tuesday, November 27, 1956 for Contract 439, for the construction of about six miles of sewers, including a railroad crossing, four stream crossings, manholes and other appurtenances, and a total of about six miles of house connections. The sewers will be from six to 15 inches in diameter and the house connections six inches in diameter. The location of the proposed work is in the Village of Margaretville and in the hamlet of Arkville, in the Town of Middletown, Delaware county, New York.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1312 (Acting Secretary's Office), at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same; the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: November 29, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., EST on November 29, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U. S. 93 for
Lowering Sills, Extending Gates
and Miscellaneous Work at Lock 23
Erie Canal, Onondaga County and
Lock 1, Oswego Canal, Oswego Co., N. Y.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor The Gov Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U. S. 93 may be examined and obtained at the office of Mr. William Robinson, District Engineer, 301 E. Water Street, Syracuse 1, New York.

The deposit for Plans and Proposal Forms for U. S. 93 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U. S. 93 is confidential and will be made known at the time of receiving bids.

Proposals for U. S. 93 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
Supt. of Public Works

OFFICIAL PROPOSALS

Bids: December 14, 1956.

Construction of Sewers

The City of Springfield, Missouri, will receive sealed proposals for the construction of interceptor and main trunk sanitary sewers until 10:00 A.M., Central Standard Time on the 14th day of December, 1956, at the office of the City Clerk, Springfield, Missouri.

All proposals received will be publicly opened and read aloud in the City Council Chambers at Springfield, Missouri, beginning at 10:00 A.M., Central Standard Time, on the 14th day of December, 1956.

The contract documents, including plans and specifications, are on file and available for inspection at the office of the Director of Public Works of the City of Springfield, at Springfield, Missouri, and at the office of Consoer, Townsend & Associates, Consulting Engineers, 360 East Grand Avenue, Chicago 11, Illinois.

Copies of documents, including plans and specifications, required for review and/or bidding purposes may be obtained only from the Director of Public Works by depositing $15.00 for proposed Division C; $15.00 for proposed Division D; and $15.00 for proposed Division E at the office of the Director of Public Works for each set of documents so obtained.

Since the documents, excluding the plans, comprise forms, information and specifications applicable to all three (3) Divisions, a single document will be issued upon request for plans for one or more than one Division. The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal proposal to the City of Springfield and who also returns the plans (and specifications on additional sets) in good condition to the Director of Public Works within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, subcontractors, and others who do not submit formal proposals to the City of Springfield will be refunded one-half (½) the amount of the deposit for all sets of complete documents, including plans and specifications, returned in good condition to the Director of Public Works within ten (10) days after the opening of bids. No refund will be made for documents received by the Director of Public Works after this ten (10) day period.

A certified check or bank draft, drawn on a solvent bank, payable without condition to the City of Springfield, Missouri, in an amount not less than five per cent (5%) of the bid shall be submitted with each proposal, as a guarantee that if the proposal is accepted by the City of Springfield, a contract will be entered into and the performance of the contract properly secured. No bid shall be withdrawn after the opening of proposals without the consent of the City of Springfield, Missouri, for a period of thirty (30) days after the scheduled time of closing bids. The bid securities of all bidders, except that submitted with the lowest acceptable proposal on each Division, will be returned within ten (10) days after the time of opening bids. The bid security of the lowest acceptable proposal on each Division may be held by the City of Springfield until a construction contract has been executed and a satisfactory performance bond and a satisfactory labor and material bond in the sum of the full amount of his contract has been delivered to the City. The City of Springfield reserves the right to reject any or all proposals and to waive any informalities or irregularities in the bids received, or to accept any proposal on any one Division or a combination of Divisions which is deemed most favorable to the City, at the time and under conditions stipulated in the Instructions to Bidders.

The improvements on which proposals are solicited are divided into three (3) Divisions and bidders may submit a proposal on any one or a combination of Divisions as listed in the Proposal Form. The proposal on each Division shall include furnishing of all labor, materials, equipment, tools, supplies, etc., for a complete operating installation. The work to be constructed under each Division is briefly described as follows:

DIVISION C—SOUTH CREEK MAIN INTERCEPTOR SEWER:

This Division includes the furnishing and installation of approximately 12,000 lineal feet of reinforced concrete pipe sewer in 48" and 60" sizes, in open cut and tunnel, complete with appurtenances.

DIVISION D—TUNNEL, WILSON CREEK TO SOUTH CREEK:

This Division includes the furnishing and installation of approximately 8,200 lineal feet of 60" internal diameter concrete lined rock tunnel, 60" internal diameter reinforced concrete pipe in open cut, and 66" internal diameter reinforced concrete pipe encased in concrete, together with all appurtenances.

DIVISION E—TRUNK SEWER EXTENSIONS—NORTH AND EAST SIDES:

This Division includes the furnishing and installation of extensions to existing trunk sewers on the north and east sides of the City of Springfield. These extensions include approximately 13,600 lineal feet of reinforced concrete, cast iron and vitrified tile pipe sewers in sizes ranging from 10" to 21", together with all appurtenances.

Plans and specifications for this project were prepared by Consoer, Townsend & Associates, Consulting Engineers, 360 East Grand Avenue, Chicago 11, Illinois.

Dated at Springfield, Missouri, this 31st day of October, 1956.

CITY OF SPRINGFIELD, MISSOURI
W. B. Avery, City Manager

Bids: December 5, 1956

State of Rhode Island and Providence Plantations

DEPARTMENT OF ADMINISTRATION
DIVISION OF PURCHASES
NOTICE TO BRIDGE CONTRACTORS

Sealed Proposals enclosed in an envelope endorsed "Proposal for R.I. Contract No. 5655, F. A. Project No. I-01(10), Superstructure of Pawtucket Bridge No. 550" and addressed to the State Purchasing Agent, R.I. Department of Administration, Division of Purchases, 125 State House, Providence 2, Rhode Island, will be received until 11:30 A.M. on the 5th day of December 1956, at which time they will be opened and read in public.

R.I. Contract No. 5655, R.I. Federal Aid Project No. I-01(10), Pawtucket Bridge No. 550, Construction Contract Two, County of Providence, Pawtucket, Rhode Island. Construction consists of the superstructure for a 5-span deck girder bridge having a length of 700 feet and a width of 109 feet, and includes concrete deck slab, structural railing and highway pavement. Approximate principal quantities: 2700 tons of structural steel, 2385 cubic yards of concrete in reinforced concrete deck, and 8,000 square yards of asphalt pavement.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans, Specifications and Special Provisions may be examined at Room 125, State House, or Room 232, State Office Building, Providence, Rhode Island, on and after November 7, 1956 every week day except Saturdays and holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting Proposals may be obtained through the office of the State Purchasing Agent at Room 125 State House. A deposit of $100.00 shall be made for each set of contract documents which will be refunded if Plans and Specifications are returned in good condition within two weeks after the opening of bids.

A certified check or bid bond payable to the State of Rhode Island, or cash, in the amount of $50,000 must be furnished by each bidder. This Proposal Guaranty will be returned after the contract has been executed, unless forfeited in accordance with the stipulations in the proposal.

A performance bond of one hundred (100) percent of the contract price with a satisfactory surety company will be required of the successful bidder. The Division of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS: The attention of prospective bidders is called to the fact that this project is to be bid upon and the contract executed under the rules and regulations for carrying out the provisions of the Federal-Aid Highway Act of 1956 and the Special Provisions, dated October 12, 1954, as amended and supplemented, as required by the Department of Commerce, Bureau of Public Roads.

WAGES OF LABOR ON INTERSTATE HIGHWAY PROJECTS: The prevailing rate of wages for laborers and mechanics employed by contractors or subcontractors on the initial construction of highway projects on the Interstate System, authorized under the Federal Highway Act of 1956 shall be paid wages at rates not less than those prevailing on the same type of work on similar construction in the immediate locality as determined by the U. S. Secretary of Labor in acordance with the act of August 30, 1935, known as the Davis-Bacon Act, under the decision No. R-3891, which is part of the contract.

Chapter 290 of the R.I. General Laws, 1938, as amended, requires that "the contractor to whom the contract is awarded and any subcontractor under him shall have ordinarily paid the prevailing rate of per diem wages and shall continue to pay the prevailing rate of per diem wages and the general prevailing rate for regular, holiday, overtime and other working conditions to all workmen needed to execute the contract or work". The schedule of prevailing wage rates of per diem wages in the locality in which the work is to be performed for each craft, mechanic, teamster, laborer or type of workman needed to execute the contract work is on file in the office of the Rhode Island Department of Labor.

On State, City and Town projects Chapter 291 of the General Laws of 1938 as amended, requires that Rhode Island citizens be given preference in employment.

SUBLETTING OR ASSIGNING THE CONTRACT: The attention of bidders is directed to the Standard Specifications and Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF ADMINISTRATION
DIVISION OF PURCHASES
By Joseph L. Byron
State Purchasing Agent

Bids: December 19, 1956

Construction of Branch Interceptor Louisville and Jefferson County Metropolitan Sewer District Louisville, Kentucky

Sealed proposals for the construction of the 38th Street Branch Interceptor Sewer in Louisville, Kentucky, will be received on Wednesday, December 19, 1956, until 12:00 o'clock Noon, Central Standard Time at the District Office, 412 West Market Street, Louisville, Kentucky, at which time they will be publicly opened and read.

Alternate proposals for bids for constructing the Interceptor Sewer will be taken in open cut and tunnel. All excavation will be in sandy and clayey materials and in paved City Streets. The approximate lengths of the Interceptor are:

1. 36" R. C. C. Pipe 4670 lin. ft.
2. 30" R. C. C. Pipe 3080 lin. ft.
3. 24" Pressure Main 1324 lin. ft.
4. Junction chambers, manholes and appurtenances.

Plans, Specifications and information for Bidders will be available November 15, 1956, at the Office of the District which will be furnished to prospective bidders upon the deposit of $20.00 for complete set of Plans and Specifications. Said deposit will be refunded upon return of the Plans and Specifications in good condition within 30 days after the date of opening the bids.

Bidder's proposal must be accompanied by a Certified Check in an amount not less than ten per cent (10%) of the lump sum price or prices, plus the evaluated prices of the other items of the proposal, for the highest alternate bid. Successful bidder must furnish one hundred per cent performance bond.

Louis J. Herrmann, Sr.
Chairman of the Board

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4729) will be received at Cody, Wyoming, until December 19, 1956, for furnishing labor and materials for rehabilitation of Lower Outlet Works and Penstock Intakes at Buffalo Bill Dam, Shoshone Project, Wyoming. Location near Cody, Wyoming in Park County. Principal items are 4,800 cu. yds. excavation; 1,360 cu. yds. concrete; unwatering lower outlet tunnel; and other work. Completion time 800 days. For particulars, address Bureau of Reclamation, P. O. Box 839, Cody, Wyoming; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4800) will be received at Kanab, Utah, until December 18, 1956, for furnishing labor and materials for Colorado River Bridge, Glen Canyon Dam, Colorado River Storage Project, Arizona-Utah. Location near Lees Ferry, Arizona. Principal items are 2,650 cu. yds. of concrete; furnishing and erecting 7,250,000 pounds structural steel; furnishing and placing 335,000 pounds of reinforcement bars; and other work. Completion time 750 days. For particulars, address Bureau of Reclamation, P. O. Box 267, Kanab, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

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Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

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Opportunity for growth with a new division of an old, established company.

Openings for engineers with
Architectural
Structural
Mechanical
Plastics
experience in building products field.

Send complete personal and employment history with compensation requirements. (Chicago location.)

P-3453, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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COME SOUTH!

We have immediate openings for Engineers—Designers—Detailers—Draftsmen—Civil—Highway—Structural—Traffic—Architectural—Mechanical—Electrical. Company-paid hospitalization, life insurance and retirement. 40-hour week. Air-conditioned offices. Salaries $400 to $800, depending on education and experience. Permanent position. Excellent opportunities for advancement. Send complete resume of education and experience with salary requirement to:

PALMER & BAKER, Inc.
P. O. Box 346
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Engineering Agency
209 S. State St., 7th fl.
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Wabash 2-2900
ALL POSITIONS 100% FREE

Structural Draftsmen
$3.00 - $5.50 hr.

Experience in any phase of construction drafting is welcome. Interested in young men getting started as well as heavier experience.

Ask for R. A. Beal
Call—Write—Wire

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For Industrial Construction Division

Degree desirable; 10-15 years' administrative, executive & technical experience; knowledge of field construction for the supervision of activities of the industrial construction division. Extensive travel, liberal per diem.

DIVISION MANAGER

For Power Plant Projects Design

10-15 years in thermal power plant engineering, design, layout & project work. Degree required.

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For Development of New Power Plant Business

10-15 years' experience in thermal power plant designing, development, economic studies & sales. Personal contact with people in this industry required. Degree desirable. Extensive travel, liberal per diem.

Rapidly-expanding world-wide engineering firm located on the West Coast offers Relocation Expenses & Oustanding Company Benefits. Send resume to:

P-3449, Engineering News-Record
Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Estimator for North Jersey Area—Experienced in heavy construction work, process piping, pipe lines, dams and bridges. Please submit complete resume, noting salary range and availability. P-3277, Engineering News-Record.

Teaching appointments for September, 1957, available at university-associated College of Engineering in field of Civil Engineering. Salary and rank commensurate with experience and academic qualifications. Primary teaching field open as present faculty is flexible; preference, if any, would be in sanitary engineering and allied fields. Suburban location, Middle West, adjacent to large industrial center. P-3268, Engineering News-Record.

City Engineer: Unusual opportunity for graduate Civil Engineer or equivalent with professional license in southern Pennsylvania city. Experience essential in land surveying, street and sewer design and construction and related municipal work. Experience desirable in zoning and subdivision control. No structural design is involved. Would be in charge of Engineering Department, supervise survey crew and draftsmen, and would be expected to meet the public as required. Salary range $7,000 to $8,500 with usual benefits. Permanent non-political position for right man. Send resume of training and experience to: Borough of Chambersburg, 100 South Second Street, Chambersburg, Pa. Attention: J. G. Cree.

Wanted: Office Engineers and Draftsmen experience in the design of municipal paving and sewer projects. Also construction inspectors for large sewer improvement project. Live in beautiful Ozarks, excellent school system—grade, high school and college—reasonable living costs, salary commensurate with training and experience, plus paid vacation and sick leave. Contact Personnel Department, City Hall, Springfield, Missouri.

Estimator—Buffalo, New York Area experienced on large building propects. Please furnish experience record and salary requirements. Johnson, Drake & Piper, Inc. 2760 Walden Avenue, P. O. Box 2567, Buffalo 25, New York.

Chairman of civil engineering department in college in New York State. Ph.D. desirable, not essential. Position open summer of 1957. P-3324, Engineering News-Record.

POSITIONS VACANT

Professor or associate professor in civil engineering and mechanics. College in New York State. Term starting February or September 1957. Ph.D. desirable, not required. P-3328, Engineering News-Record.

Engineers and draftsmen structural for steel and concrete design Public Buildings. Consulting Engineers office. Call or write giving training and experience. Saul Shaw & Co., 24 Commerce St., Newark, N. J.

Wanted: Draftsmen, also Bridge Designers and Highway Designers, preferably with some field experience for major highway and bridge projects. Forward education and experience records along with salary requirements. Brookhart & Tyo, Consulting Engineers, 1729 N. Front Street, Harrisburg, Penna.

Civil Engineer: To supervise Engineering Department in rapidly growing Santa Clara Valley City. Population 21,000 will increase to 45,000. Must have 5 years experience in C. E. Salary range $553-673. Submit a letter of application giving experience, education and personal background to Personnel Office, City Hall, Mountain View, Calif.

Associate Engineer ($425 to $575) in New Mexico Health Department, B.S. in civil or sanitary engineering. Write: Merit System, Box 939, Santa Fe, New Mexico.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Experienced Estimator, Capable of preparing estimates, pricing, purchasing, subcontract negotiation. Permanent position with old established and progressive General Contractor located near Chicago. Send complete history including education, past experience, reference and salary expected. P-3364, Engineering News-Record.

Wanted, Civil Engineering Draftsmen, Ink Tracers, Computers, Land Surveyors. Only well qualified need apply. Give experience record and salary expected in first letter. P-3379, Engineering News-Record.

Carpenter foreman or carpenter superintendent who is qualified to take over 3 highway bridges and complete same. Must be thoroughly familiar with plans and specifications. P-3386, Engineering News-Record.

(Continued on page 126)

Plan Your Future with BECHTEL in California on Hydro Electric Power Design

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Designers
Piping
Electrical
Structural

Men experienced in design of earth-fill or concrete dams, spillways, penstocks and hydro electric power stations are desirable. Allied experience acceptable.

Send resume to
Manager of Employment & Placement
Industrial Relations Division

BECHTEL
Corporation
220 Bush St., San Francisco 4, Calif.

For an immediate personal interview you may phone:
Paul Keating, Plaza 7-4400, New York City
Joe Braddick, Fairfax 2-2401, Houston, Texas
Bill Milligan, Tucker 1549, Los Angeles, Calif.
Don Palmer, Douglas 2-4032, San Francisco, Calif.

Engineers Architects

Highway Designers—Draftsmen
Rochester & Harrisburg, Pa., Jackson, Miss. & Ft. Lauderdale, Fla.
Bridge Designers—Draftsmen
Harrisburg, Pa.-College Park, Md.-Ft. Lauderdale, Fla., Jackson, Miss.
Architectural Designers—Draftsmen
Rochester, Pa.
Civil Engineering Draftsmen
Jackson, Miss.
Ink Tracers—Computors
Rochester, Pa., Jackson, Miss.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

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Key positions open for experienced Engineers to be in responsible charge of individual projects with excellent opportunities for advancement.

CIVIL OR SANITARY ENGINEER to Design Sewage Treatment Plants and Sewage Works.

STRUCTURAL DESIGNERS experienced in Concrete and Steel Design of Sewage Treatment, Water Treatment Plants, or the design of Hydraulic Structures in connection with Dams.

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Also key positions for:

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Ideal living conditions. Vacations and sick leave, Bonus, Insurance and Retirement Benefits.

Send complete resume to—

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P. O. Box 366 Harrisburg, Pennsylvania

ENGINEERS

The Sherwin-Williams Company, world's largest manufacturer of paints, varnishes and lacquers, has two excellent engineering positions available at its main Engineering and Construction center located at 115th and Cottage Grove in the southern section of Chicago, Illinois.

Project Engineer

Desire a graduate M.E. with approximately three to five years' experience, preferably in a chemical plant, who will be able to take plans from architects, design or layout engineers, and make complete installations in present manufacturing departments as well as in new departments or divisions. Must have supervisory ability as he will supervise at least two or more subordinates. This is a position of promotional opportunity.

Structural Design Engineer

Applicants should have a B.S. degree in Civil Engineering with aspirations of obtaining structural engineer license. Design structures such as building additions, alterations in existing buildings and new buildings from time to time, as well as designing steel and structural supports for additional equipment and material loads in existing buildings. Also has the opportunity to handle some process engineering work. Should have supervisory ability since he will, after training, supervise the work of draftsmen in the department. Experience in structural design preferred but not necessary.

Please state age, education, experience, salary desired and other information. All replies confidential.

Industrial Relations Department
The Sherwin-Williams Co.
101 Prospect Avenue, N. W.
Cleveland 1, Ohio

ENGINEERS

Live and Work in a small progressive City near Columbus, Ohio. Positions open, Consultants office employing 40—50.

(A) Structural engineer, C.E. graduate, registered, with minimum 5 years experience designing reinforced concrete and structural steel. Supervision of structural design section.

(B) Mechanical or civil engineer with minimum 5 years experience design and/or constructing sewage and water treatment plants to check shop drawings and supervise construction work.

Salaries open; Permanent position for qualified engineers. Full information desired.

P-3305, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

HIGHWAY DESIGN ENGINEERS

Permanent positions for men with degrees and 2 to 5 years' experience or equivalent. Work for old established consulting firm in Harrisburg, Pennsylvania. Excellent living conditions, fully paid retirement, insurance, vacation, holidays, new air-conditioned offices, hospitalization insurance available. Send resume to Modjeski and Masters, Harrisburg, Pennsylvania.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

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Foreign Employment
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Field Engineers with refinery or related construction experience.

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No Family Housing

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Manager of Employment & Placement
Industrial Relations Division

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Are you worth up to
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Important permanent positions, paying from $6,500 to $10,000 a year with unusual future opportunity, have been created by the expansion program of our large, long-established engineering and construction firm. We need qualified engineers, designers and draftsmen experienced in structural, concrete, mechanical and piping design. Engineering offices are in several major American cities and Canada. Excellent working conditions. Generous company benefits. Our employees know of this ad.

Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-3067, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SUPERINTENDENT

Wanted by a substantial company now producing concrete masonry building units a superintendent to take charge of designing, building and operating an additional plant in which all types of pre-cast structural shapes will be produced.

Exceptional opportunity for the right man.

In making application, please state experience and salary desired.

P-3310, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

ENGINEERS
Civil & Structural

Permanent positions for squad leaders, designers and draftsmen with established consulting firm for large hydro-electric and irrigation projects. Liberal benefits. Salary commensurate with qualifications. Submit complete experience record and salary requirements.

ERIK FLOOR & ASSOCIATES, INC.
139 N. Clark St. Chicago 2, Ill.

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DESIGNERS
DRAFTSMEN
Drainage Engineers

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

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Submit resume stating education, experience, salary requirement, and availability, or send for our application form.

FAY, SPOFFORD & THORNDIKE, Inc.
Consulting Engineers
11 Beacon St., Boston 8, Mass.
Personnel Dept. Tel: LAfayette 3-8300

TRAFFIC ENGINEER

Graduate Engineer with at least one year of traffic engineering experience or education. Experience in highway engineering desirable but not necessary.

SALARY: $6500 to $8000

Apply: Malcolm E. Austin

CLARKESON ENGINEERING CO. INC.
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Arthur G. McKee & Company
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Civil or mechanical engineering graduate preferred. Practical knowledge of soil mechanics desirable. Excellent opportunity for alert young engineer. Submit complete resume including salary desired.

RAYMOND CONCRETE PILE COMPANY
(Boring Division)
140 Cedar Street New York 6, N. Y.

EMPLOYMENT OPPORTUNITIES

POSITIONS VACANT

(Continued on page 123)

Wanted: Civil Engineer, registered in New Jersey, at least 10 years experience in road and bridge design and construction. Must have executive ability. State qualifications in full, experience resume, references and salary requirements. Reply to P-3307, Engineering News-Record.

Junior Construction Cost Engineer. Some knowledge of estimating desirable. Excellent opportunity with long established international company. Location New York City. P-3347, Engineering News-Record.

Teaching Personnel for the department of Mechanics, B.S. in engineering required, Masters Degree preferred. No teaching or industrial experience necessary. Salary range $4000 to $6500 for nine months. Rank and salary dependent upon qualifications. Location Southwest. P-3417, Engineering News-Record.

Wanted: Graduate Mechanical Engineer to age 35 New York office international and domestic contractor—permanent job. Must have at least two years experience specifying and inspecting contractors heavy equipment. P-3418, Engineering News-Record.

Engineering—With experience on sewers and pavements to supervise field construction. Permanent position under Civil Service with retirement plan. Apply Personnel Director City Hall, Royal Oak, Michigan.

Civil or Sanitary Engineers salary open—depending upon qualifications. Send resume to Gardner & Sterling, Consulting Engineers, P. O. Box 74, Salisbury, Maryland.

Experienced Estimator and Chief Engineer between the ages of 34 and 48 for preparing estimates, pricing, purchasing, expediting, and job management. Permanent position for the right man with Midwest General Contracting firm specializing in industrial, commercial and public works. As this job will be in the capacity of assistant to the president, none but top men need apply. Send complete history, including education, past experience, references, salary expected, and photograph, if available. P-3451, Engineering News-Record.

Structural Engineers—Two to ten years experience on buildings or bridges. Attractive offer with progressive consulting firm. Box 121, Station H, Toledo, Ohio.

POSITIONS VACANT

Draftsmen—Opportunity for growth with a new division of an old, established company. Openings for draftsmen with architectural, structural or mechanical experience. Send complete personal and employment history with compensation requirements. (Chicago location). P-3452, Engineering News-Record.

City Engineer for city of 26,000 population. Graduate engineer required—state salary expected, experience, age, availability and references. Reply City Manager, Gloucester, Mass.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency 2132 E. 9, Cleveland.

EMPLOYMENT SERVICE

Salaried Positions $6,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

POSITIONS WANTED

Civil Engineer, 50. Administrative, executive, expressways, bridges, steel and concrete structures, sewage, design and construction. Available Nov. 22 PW-3293, Engineering News-Record.

Project manager graduate professional engineer, 43. Heavy background in power and industrial plants—engineer—design—construction—management. Present project terminating. Staff available. PW-3287, Engineering News-Record.

Construction Executive, Chief Estimator fully experienced, quantity survey to completion, subs, purchases, job manage heavy industrial, commercial, monumental, prefer N. Y., N.E., Mid-Atlantic States. PW-3313, Engineering News-Record.

Civil Engineer Graduate (39), wide experience in construction, estimating, survey and office, desires responsible position with reputable company in Caribbean or South America. Would consider partnership in growing Florida concern. PW-3423, Engineering News-Record.

POSITIONS WANTED

Superintendent, Heavy & Bridge Construction, 19 years experience, bid to completion, $200. PW-3420, Engineering News-Record.

Construction Engineer—B.Sc. Arch. Eng.— Age 36—4 years structural engineering, 10 years building construction estimating, purchasing, supervision, labor negotiations, complete responsibility. PW-3442, Engineering News-Record.

Materials Testing Engineer — 8 years exp., college degree, desires position preferably in New Jersey. Presently supervising Spanish technicians on air base program. Available Feb. 1957. PW-3443, Engineering News-Record.

Construction Administrative Executive capable of heading construction program. 25 years wide and diversified experience—heavy in plans and specifications production; budget control; awarding contracts; field management. Registered Architect; Registered professional engineer. Available December 1st. PW-3440, Engineering News-Record.

Construction Executive or engineer 25 years experience on heavy industrial construction, at home & abroad, mostly in oil refineries, highways, rubber & TNT plants & factory type buildings. Seek a permanent connection, location immaterial. PW-3425, Engineering News-Record.

Salesman, estimator, production man experienced in large scale industrial roofing and sheet metal contracting, wants worth-while connection with growing firm. Can produce profitable sales in volume. Write PW-3430, Engineering News-Record.

Management position wanted in industrial roofing and sheet metal contracting, by highly experienced executive, capable and well-known in the industry. Write PW-3433, Engineering News-Record.

Construction Superintendent: 25 years experience, field supervision constructing industrial commercial, institutional bldgs, large scale housing, churches, etc.; desires similar position with reliable organization; will travel. PW-3426, Engineering News-Record.

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Industrial Product manufacturer, established in all branches industries and administrations, network representatives France and Benelux, seeks all articles for dinistribution. Reference clients on request. Write Agence Havas No. 281/598 Rue Vivienne 17, Paris.

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Contract Disputes? Government construction contractors who have contract questions under dispute are offered my experience in the settlement or the appeal of said disputes. SS-2433, Engineering News-Record.

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Mill Supply and Construction Company needs partner to check fabrication in New Orleans and supervise foreign installations of machinery and equipment. Required investment $6,000.

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16 cylinder, VEE type, 9" bore, 10½" stroke. Supercharged. Modern unit. Suitable for dredge or Marine service.

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By marine contractor, **two steel deck barges, one steel dumper barge, one steel tank barge & one small tug.**

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If planning to buy a truck, get in touch with us right away. There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, wire or phone COLLECT—JAckson 5-7841
Milton Y. Toombs, Jr. Sales Manager

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Aluminum Co. of America 79, 88
American Bitumuls & Asphalt Co. 83
American Bridge Div., U. S. Steel Corp. ... 71
American Foreign Ins. Assn. 73
American Mutual Liability Ins. Co. 42, 43
American Steel & Wire Div., U. S. Steel Corp. 65-68
American Vitrified Prod. Co. 5
Armco Drainage & Metal Prod., Inc. 48

Barco Mfg. Co. 56
Behlen Mfg. Co. 92
Belmont Iron Works 90
Bethlehem Steel Co. 86
Bruning Co., Inc., Charles 57
Buffalo Forge Co. 80
Butler Mfg. Co. 52
Byers Co., A. M. ..... 2nd Cover

Case Foundation Co. 99
Caterpillar Tractor Co. 30, 31
Cen-Vi-Ro Pipe Co. 32
Chevrolet Motor Div., General Motors Corp. 60, 61
Cities Service Oil Co. 109
Clayton Mfg. Co. 99
Clow & Sons, James B. 78
Cole Mfg. Co., R. D. 131
Committee on Steel Pipe Research 106

Dravo Corp. 97, 131
Dudgeon, Inc., Richard 88

Economy Forms Corp. 90
Euclid Div., G. M. C. 10

Ford Motor Co., Indust. & Engine Div. 15

Gahagen Construction Corp. 90
Goodyear Tire & Rubber Co. 1
Griffin Wellpoint Corp. 54
Gulf Oil Corp. 105
Gunite Concrete & Construction Co. 94

Hartford Fire Ins. Co. 37
Hartford Accident & Indemnity Co. 37
Heltzel Steel Form & Iron Co. 74, 75
Hercules Motors Corp. 64
Horn Co., Inc., A. C., Div. of Sun Chem. Corp. 39
Hose-McCann Telephone Co., Inc. 112
Hughes Bros., Inc. 100
Hyatt Bearings Div., G. M. C. 18

International Harvester Co. 12, 13
Irving Subway Grating Co. 113

Jenkins Bros. 20
Johns-Manville Corp. 62
Joy Mfg. Co. 91

Kaiser Aluminum & Chem. Corp. 53
Keasbey & Mattison Co. 41
Kensington Steel Co. 49
Kohler Co. 100

The Lamson & Sessions Co. 115
Larsen Prod. Corp. 82
Lefax Co. 94
Lehigh Portland Cement Co. 93
LeRoi Co. 76
Leschen Wire Rope Div., H. K. Porter Co., Inc. 63
Lipe-Rollway Corp. 11
Louisville Cement Co. 4
Luria Engr. Corp. 89

Masters Builders Co. ..... 3rd Cover
McKiernan-Terry Corp. 92

Naylor Pipe Co. 8
Northwest Engineering Co. 3

Olin Film Div. 9
Owens Corning Fiberglas Corp. 111

Pennsylvania Drilling Co. 88
Perlite Div., Gt. Lakes Carbon Corp. 95
Phoenix Bridge Co. 90
Pittsburgh Coke & Chem. Co. 101
Pittsburgh Corning Corp. 85

Republic Steel Corp. 50, 51
Robertson Co., H. H. 59
Roebling's Sons Corp., John A. 116
Ryerson & Sons, Inc., Jos. T. 77

Sauerman Bros., Inc. 70
Schramm, Inc. 58
Servicised Prod. Corp. 14
Sparling Meter Co. 112
Spencer, White & Prentis, Inc. 77
Surco Int. Corp. 96
Superior Lidgerwood Mundy Corp. 94
Symons Clamp & Mfg. Co. 2

Templeton Kenly & Co. 94
Texas Co. ..... 4th Cover
Thew Shovel Co., The 55
Timken Roller Bearing Co. 28
Truscon Laboratories 69

Underpinning & Foundation Co. 32
U. S. Rubber Co. 16
U. S. Steel Corp. 6, 7
United Steel Fabricators, Inc. 72
Universal Form Clamp Co. 81

Yeomans Bros. Co. 38
Youngstown Sheet & Tube Co. 98

Professional Services 130

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

Employment Opportunities 123-126
Proposals 120-122
Educational 126
Equipment
(For Rent, Sales Wanted) 126-130

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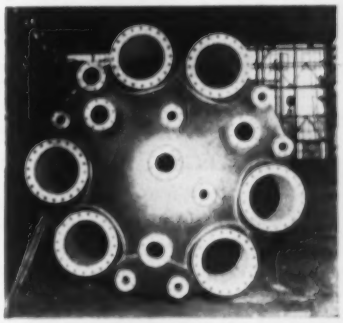

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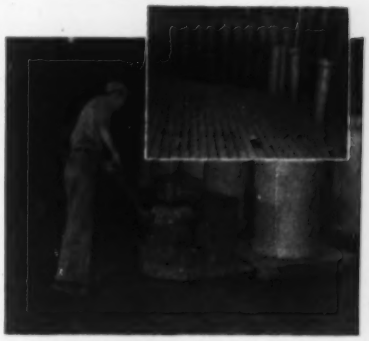

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Not Entirely for Us

COMPLETION IN GREAT BRITAIN of the world's first nuclear power plant—the 92,000-kw Calder Hall Station (ENR Oct. 25, p. 48)—revealed that some new and unusual techniques were required in its construction. It may, therefore, be useful to point out that, while these techniques are worth study by U. S. engineers and construction men, it is not likely that all of them will be applicable to U. S. nuclear power-plant construction.

The reason why the British installation is different rests in a fundamental difference in the view taken of nuclear power over there. Great Britain's coal supply is unsatisfactory—even to the point where more and more of this conventional fuel has to be imported at high cost—so that the economics of nuclear power are more attractive to the British than to us. As a consequence, in 1953, Great Britain, through its Atomic Energy Authority, made the decision to construct a nuclear prototype plant on a crash basis, using an early—and bulky—type reactor.

Moreover—spurred by sheer necessity—the British committed themselves to this one type of reactor for at least the next ten years. The U. S. is fortunate in having an abundance of conventional fuel at present and can proceed at a less rapid and more economical pace. In conjunction with private power, the Atomic Energy Commission is building a number of nuclear prototype plants with many different types of reactors.

The difference in approaches is characterized by the reactors at Calder Hall and at Shippingport, Pa., where the first U. S. nuclear power plant is under construction. The former is a graphite-moderated, gas-cooled unit fueled by natural uranium contained in a 100-psi pressure vessel, 40 ft in diameter and 60 ft high. At Shippingport, the reactor is a pressurized-water type in a 2,000-psi vessel, only 9 ft in diameter and 33 ft high.

The Calder Hall vessel posed a dramatic challenge to its builders. They had to weld 2-in. plate in the field into a vessel, which is of record size for the pressure involved, and then devise some means of heat treating the metal in place. Also, stress distribution of a 60-ton steel grid, 35 degrees redundant, which supports the graphite pile had to be gaged so deflections could be determined precisely. In sharp contrast, the smaller size of the Shippingport reactor permitted shop fabrication—an exacting but not unduly difficult operation even with 8½-in. plate.

Concrete work at both jobs is impressive, but again the British were forced into the bolder construction. For the biological shield, they utilized a dense dry mix weighing 162 lb per cu ft. It had to be formed to 0.1-in. tolerance and placed in 7-ft thicknesses up to a height of 90 ft. After considering dense concrete, the Shippingport designers settled for 5 ft of ordinary (albeit heavily reinforced) concrete, which is placed around the large steel vessels designed to contain the plant.

Thus, while American engineers have evolved several construction innovations at Shippingport, they are not confronted with such demanding requirements as the British. Visitors at the site hear the comment that Shippingport is just another heavy construction job—bigger and more exacting than most, but not unusually demanding.

The builders of Calder Hall faced and overcame unprecedented design and construction problems. Undoubtedly, their contribution is of great significance in Britain, where Calder Hall construction is to be duplicated, in essence at least in eight additional power plants. It is more difficult to assess the effect on the American scene where the probability is against reactors of the Calder Hall type being constructed. But the advances in welding large pressure vessels on site, heat treating them in place, calculating deflections of highly redundant grids, and placing dense concrete in great thicknesses and to extremely close tolerances may well find individual application in the United States. It is for that reason that the Calder Hall experience is of interest over here.

Metal Pipe for Sanitary Sewers

IT IS APPARENT from the article on the Raritan Valley cleanup on page 34 of this issue that the jury of professional opinion still has to render a verdict on corrugated metal pipe for sanitary sewers. For due to the natural reluctance of all concerned with this pioneer job to voice possibly premature judgments, the article is far from the last word. In fact, different interpretations of the unembellished facts and public statements, which it sets forth, could lead to some unwarranted conclusions.

It is true that the contractor who is installing the corrugated pipe has had difficulty. But most of the early troubles have been resolved, although the joint can stand improvement. The supplier, Armco Metal & Drainage Products Co., well realizes this, and is working on some modifications.

Also, while installation problems are significant, the most important consideration is how the pipe will behave in the ground. A complete evaluation is possible only after many years of use, but up to this time, after extensive probing of the situation, we have heard no derogatory information concerning performance of the pipe. Indeed, there is feeling that the flexible nature of the joint has advantage in soils tending to settle excessively.

The construction agency, Middlesex County Sewerage Authority, and the consultants, Metcalf & Eddy and C. J. Kupper, deserve great praise for pioneering another material in the sanitary sewer field.

Their experience indicates that prospective users of corrugated metal pipe for sanitary sewers should keep an open mind. The Raritan Valley experience should not be a deterrent, but rather a basis for more knowledgeable evaluation.

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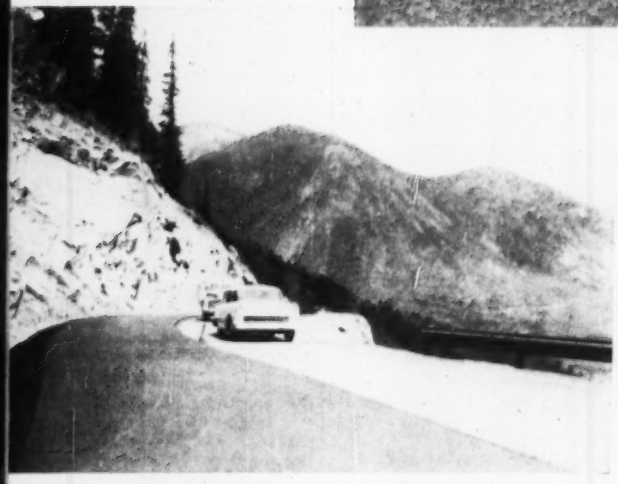
Rocky Mountain highway needs skid-resistant pavement

Constructing skid-resistant Texaco Asphaltic Concrete pavement on U. S. Route 550, where this highway crosses the Molas Divide in Colorado at an elevation of 10,000 feet.

CONTRACTORS

Lowdermilk Brothers Construction Company, Denver, Colo.

Sterling Sand & Gravel Company, Fort Collins, Colo.



Completed Texaco Asphaltic Concrete surface at the left and the 6-inch broken stone base at the right.

U. S. Route 550 crosses the Molas Divide near Silverton, Colo., about 10,000 feet above sea level. On the curves and grades of such a mountain highway, dependable skid-resistance is an exceptionally important quality in a pavement.

A hot-mix Texaco Asphaltic Concrete pavement has been constructed on this 6.8 mile section of U.S.-550. Laid to a compacted thickness of two inches, this skid-resistant, rugged wearing surface is supported by a six-inch foundation of crushed stone. The Texaco asphalt surface and the stone base form a completely flexible pavement from the subgrade up, which is capable of absorbing heavy traffic year after year, with a minimum of maintenance.

Hot-mix Texaco Asphaltic Concrete is one of many heavy-duty, intermediate and low-cost types of construction for highways, streets, airports and parking areas obtainable with Texaco asphaltic products. Helpful information about the methods and materials recommended for all these types is supplied in two free booklets. Copies may be obtained without obligation from our nearest office.

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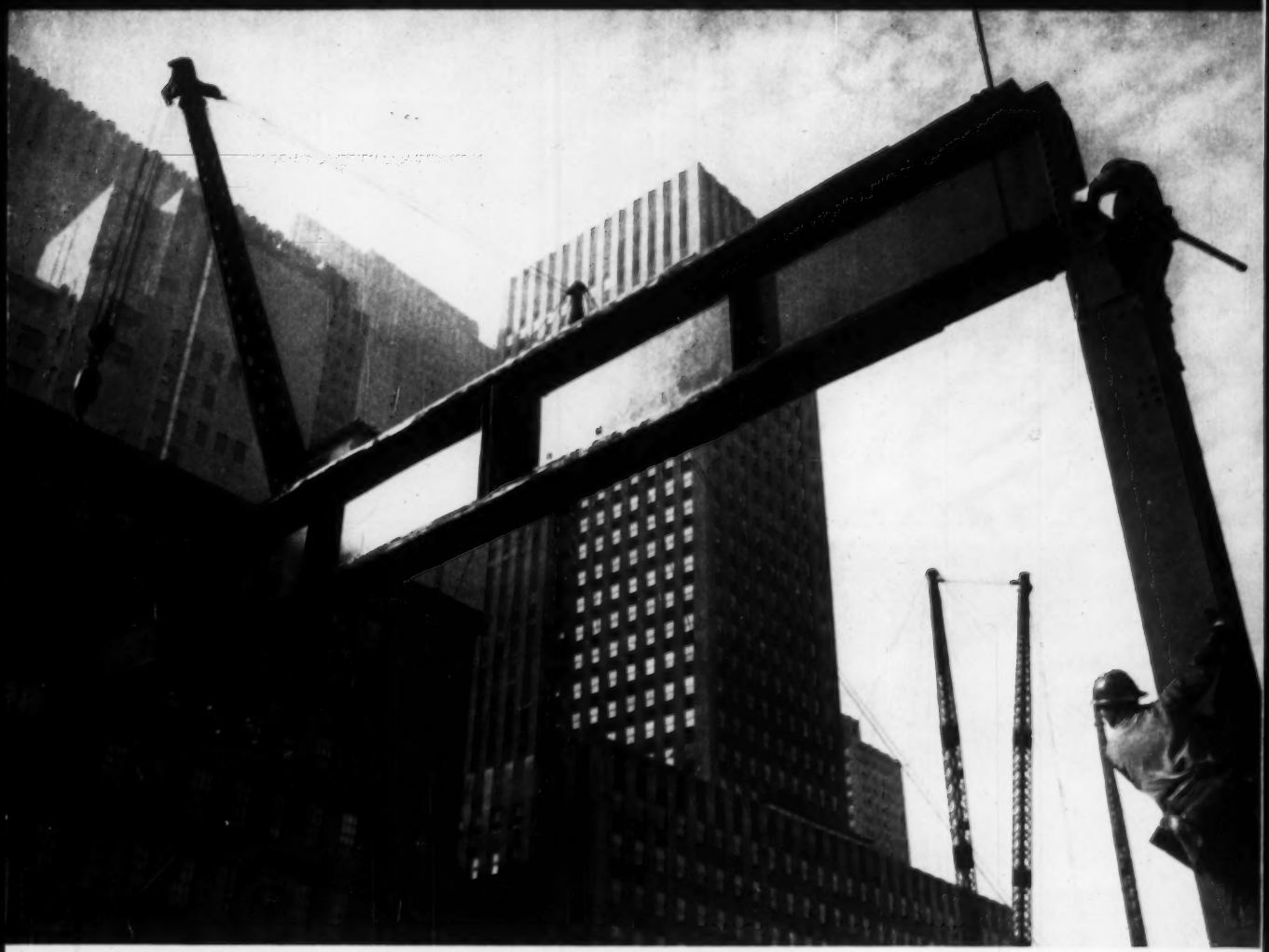

Start of world's tallest bolted building p. 28

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The street was Too Low for the sewer

Maintaining the grade line meant limited headroom for this new storm sewer in Winchester, Virginia. A full-round pipe with the necessary waterway area would have extended above the street. The solution: Armco Pipe-Arch with low, wide-bottomed design to meet both headroom and waterway area requirements.

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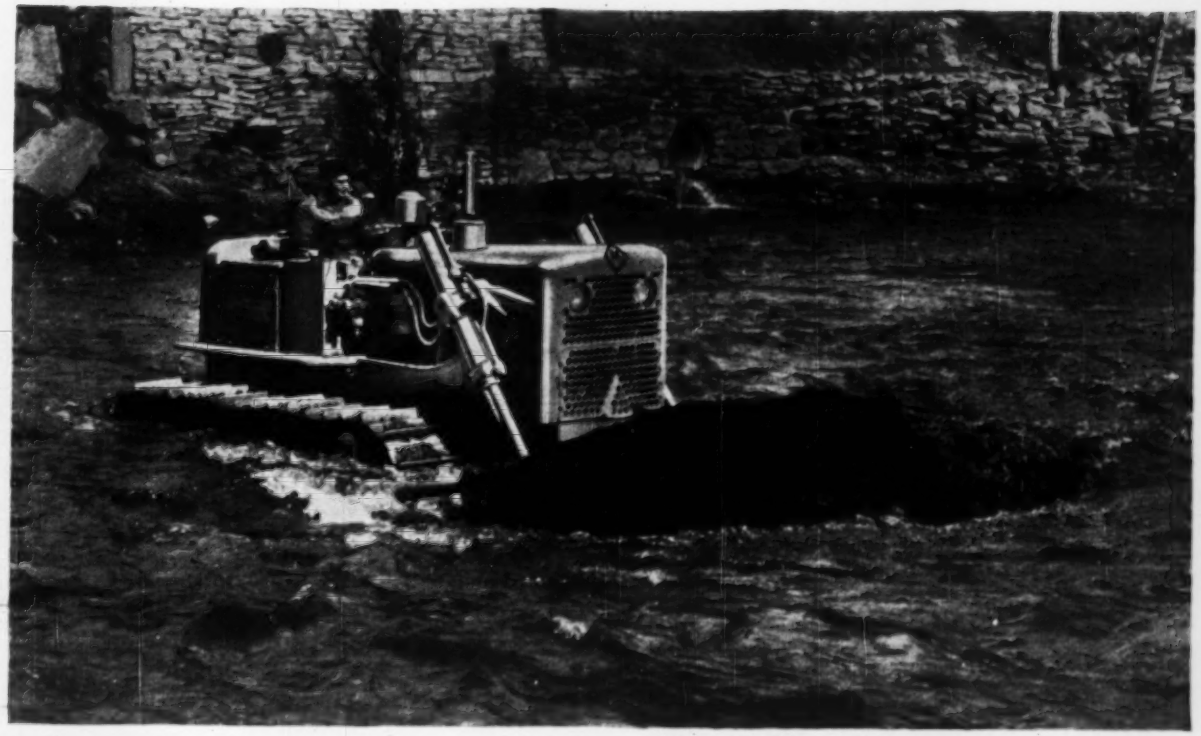

HD-11B 94 belt hp • 24,800 lb (approx.) as shown

Restoring river bed after heavy flood requires track-deep operation in water and silt

Positive Seals **in Allis-Chalmers HD-11B tractor effectively keep out damaging dirt and water**

Considerable work was required in Scranton, Pa., recently to restore the Lackawanna River bed and banks after a disastrous flood had caused waters to rise 15 to 20 feet above normal. Channels had to be cleared, creeks widened, dikes built on river banks and, in some places, the river even had to be changed back to its original course.

Restoration work was carried on by Sweeney Brothers, Scranton contractors, under the direction of the Pennsylvania Department of Forests and Waters. Key machine on one phase of the project, an Allis-Chalmers HD-11 tractor-bulldozer, often worked track-deep in water and silt while clearing channels of mud and wreckage. The dozer also maintained roads for the fleet of seven trucks hauling material from the river.

The HD-11B proved to be an ideal machine for this job, according to Thomas J. Collins, Sweeney Brothers president. "This is our first piece of Allis-Chalmers equipment and I'm happy with it. The unit has been subjected to very tough conditions and has stood up well. Considerable saving has been made because Allis-Chalmers 1,000-hour lubrication seals keep dirt and water out of truck wheels, rollers and idlers."

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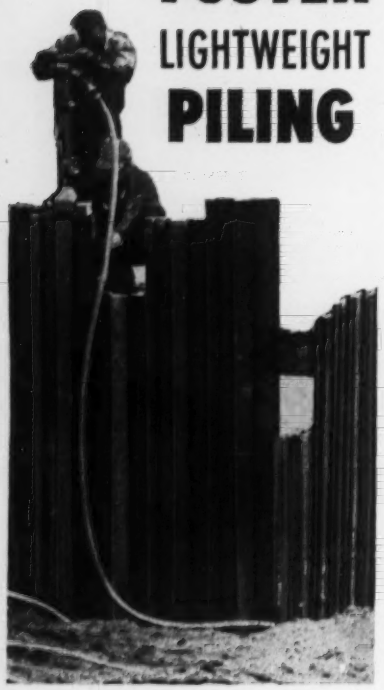

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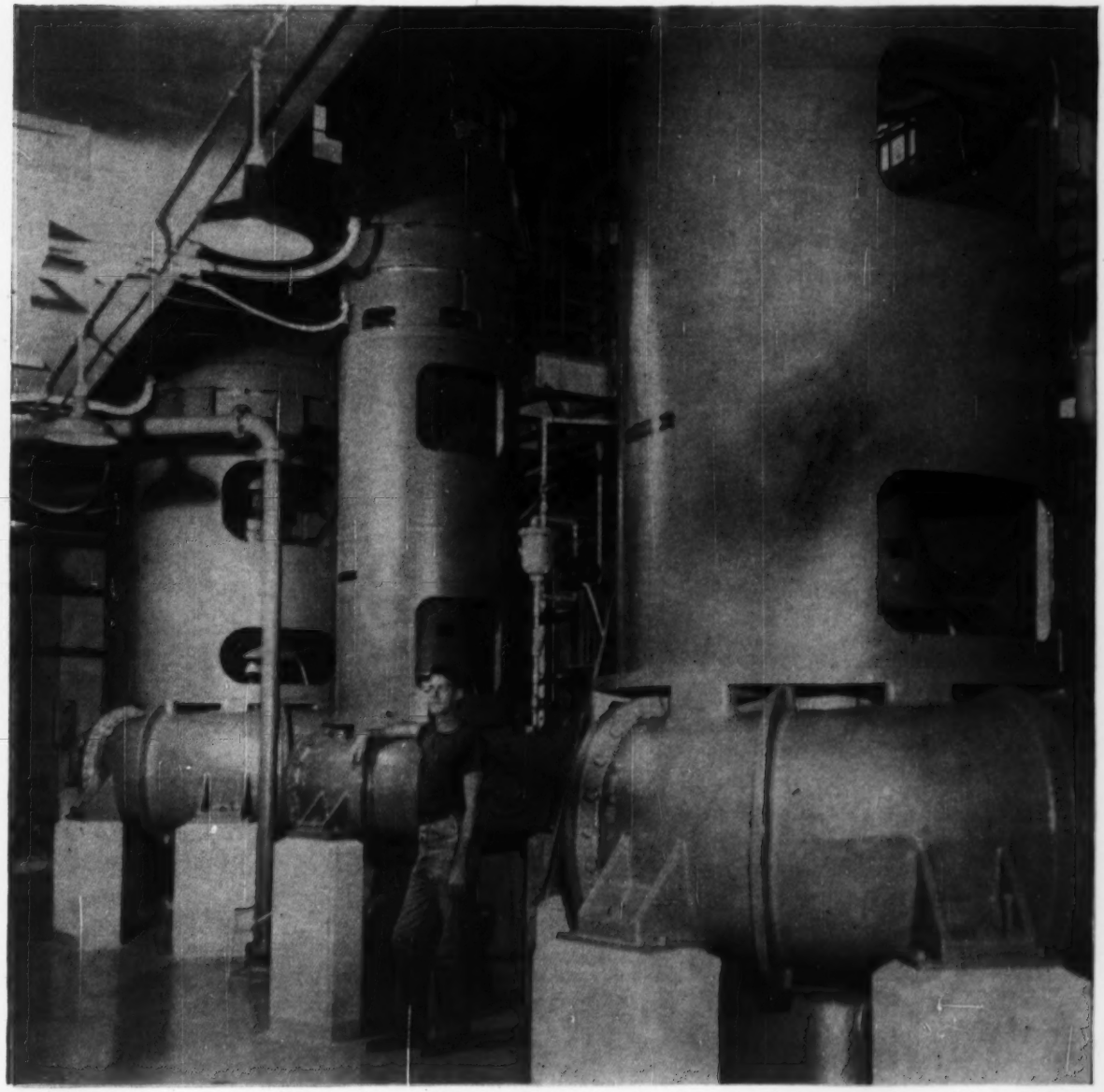

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How all-nylon Super Traction tires pull contractor through the big, tough jobs

SUGDEN & SIVIER, INC., operate 150 vehicles, including dump and transit mix trucks, semi-trailers, scrapers and graders, out of Oak Park, Michigan. The unit above is at work on a slag grading job at the Detroit Sewage Treatment Plant where both traction and flotation are all-important.

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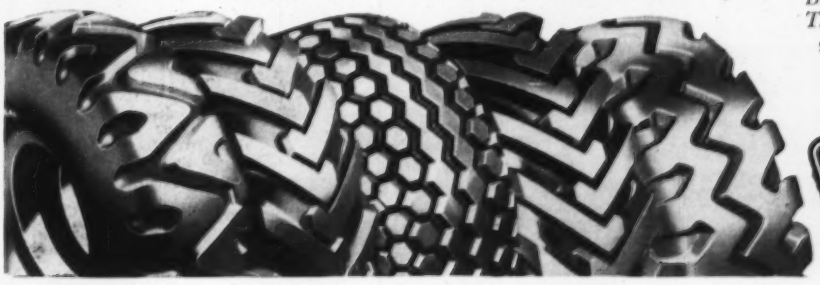

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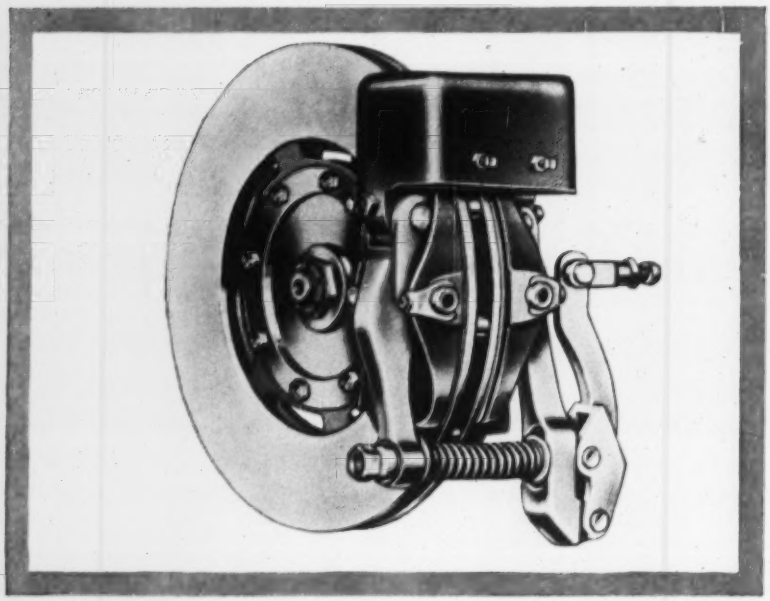

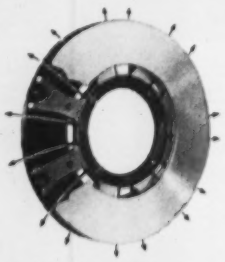

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Reader Comment

Bigger Floating Docks

SIR—I refer to the photograph and article on p. 140 of your issue of Engineering News Record dated Oct. 11 wherein you show a photograph of the "World's Largest Floating Dry Dock." From the information given in the subtitle we think the photograph of this dock appears to be a long way short of the world's largest.

The writer was personally concerned with the construction of two 50,000-ton-capacity floating docks which were built in India during the last war. From memory, the figures relating to these docks were very approximately: total length 1,000 ft, total weight 20,000 tons, total capacity 50,000 tons. Each of these docks was capable of handling the battleship 'Hood' which was of course sunk by enemy action during the last war.

J. D. THOMPSON
Works Manager
Cleveland Bridge & Engineering Co., Ltd.
Darlington, England

Cracks at Inflection Points

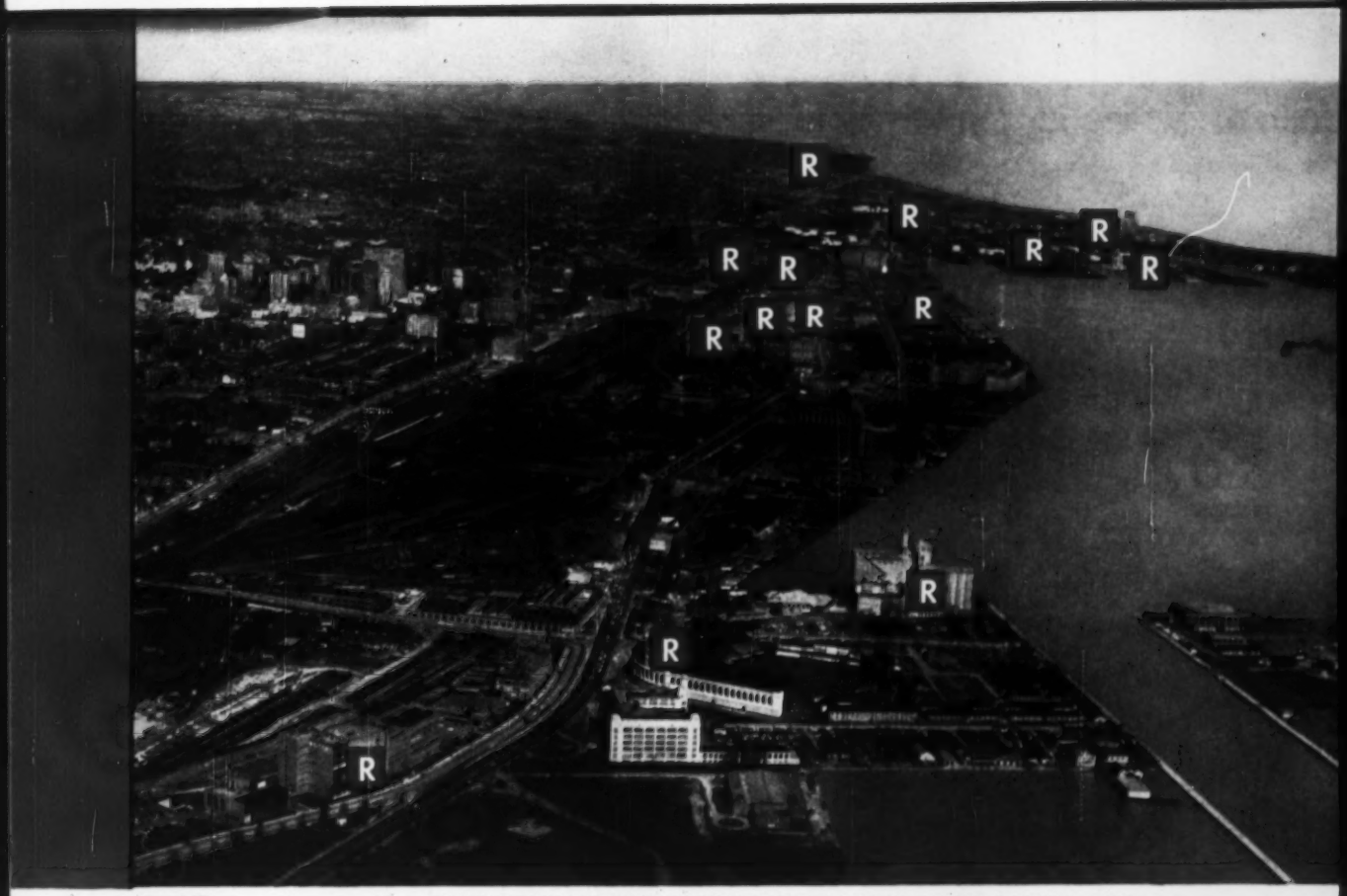
SIR—There has been a series of failures in reinforced concrete construction that definitely point to the need for some clearer thinking about the causes and how they can be prevented. It is certain that in most, if not in all, cases, there has been no deviation from current accepted practice and codes.

In all cases, the failures were due to diagonal tension and bond, especially in the case of precast concrete structures. Although no report has been released, the same finger points to the failure in Jackson, Mich., where it is obvious that an ultimate-strength safety factor was absent because of the thoroughness of the collapse.

Too much reliance is placed by many engineers on the literal application of codes, instead of on intuitive and logical thinking. The failure of the precast concrete girder illustrated in one of

(*Continued on page 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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46 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

If you're familiar with the Toronto skyline, you'll probably recognize some of the structures in this picture. But what you may not know is that in North America's major cities from coast to coast, a growing number of the most important buildings have started with Raymond foundations. In Toronto, for example, there's the Maple Leaf Stadium, The Princess Anne Entrance Gates, the huge grain elevator for the Canada Malting Company and a paper storage warehouse for *The Toronto Star*, to mention a few.

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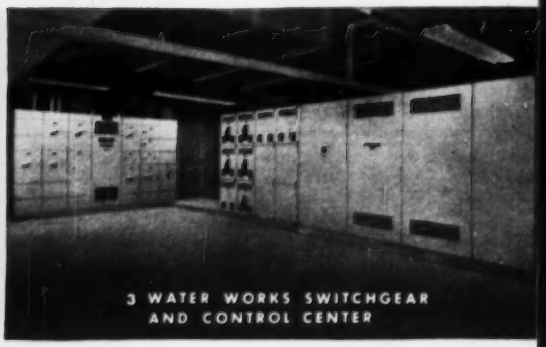
Westinghouse can help you get the most out of each shrinking dollar in a realistic way. First, by providing everything you need electrically in one integrated line. It's simpler, surer, that way.

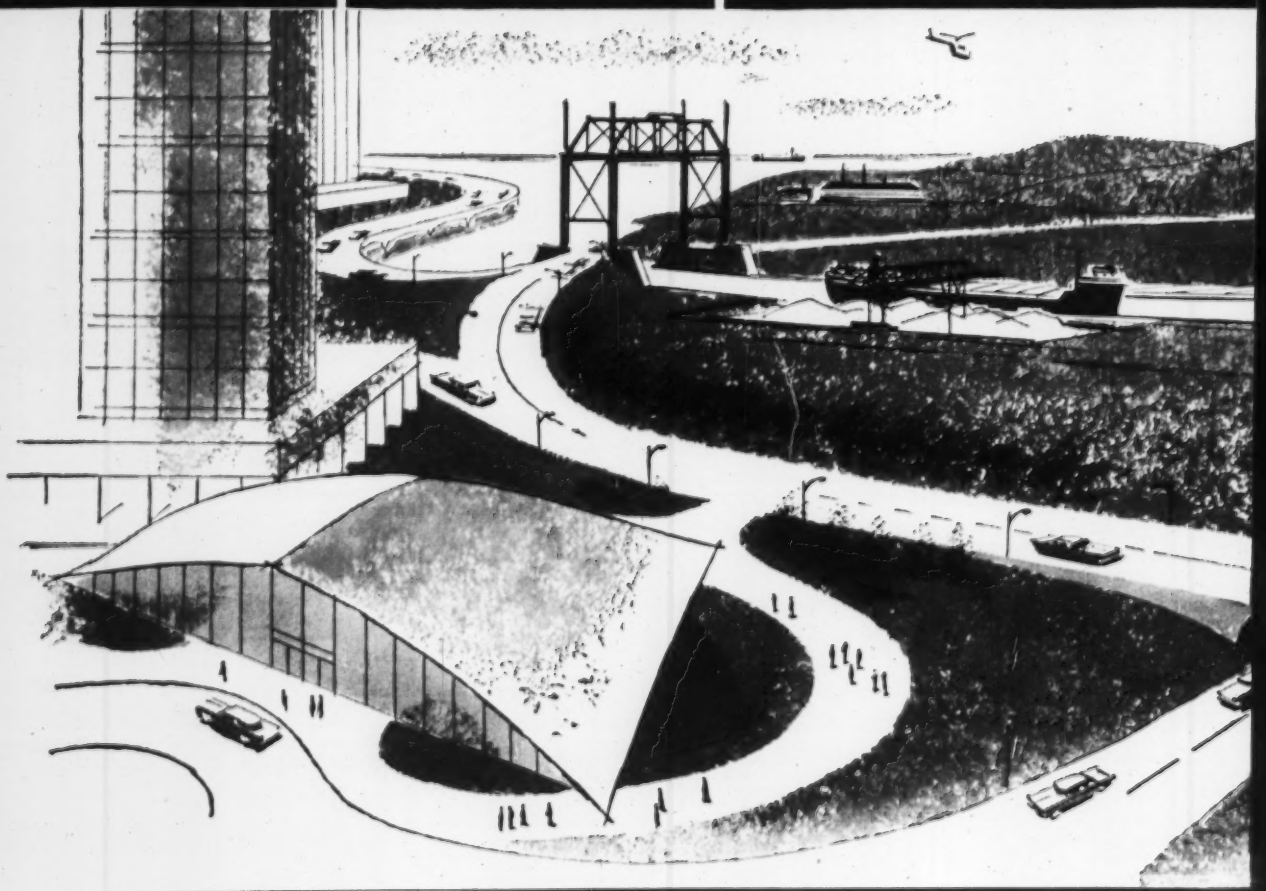
Further, by making available a specialist engineer on problems of power distribution for all kinds of

1 SEWAGE SYSTEM SWITCHGEAR — CONTROL CENTER

2 CONTROL CENTER FOR SEWAGE PLANT



3 WATER WORKS SWITCHGEAR AND CONTROL CENTER



can be stretched electrically

projects, motor applications, controls of every type, interior or area lighting, street, highway, and interchange lighting . . . anything electrical.

There is a Westinghouse electrical construction engineer in your area who will head up a team of such specialists when you or your consultants want help on electrical specs that will stretch the budget. He's as close as your telephone. Call him. Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa.

J-94063-X

1. This close-coupled assembly of Westinghouse "drawout" switchgear and control center serves the modern sewage treatment plant at Bloomsburg, Pa. 2. Another control center at Bloomsburg. All units were factory-assembled and pre-wired. 3. Incoming power for the Houston, Texas, water purification plant is received in the 1000-kva, 4160/480-277 volt power center at right. Power control at left has 480-277 volt power section, 150-kva dry-type transformer and a 120/208 volt lighting section. 4. 1000-hp Westinghouse motor driving a compressor for vehicular tunnel air system. 5. Vertical-type circulating pump for flotation beds in a Cincinnati, Ohio, sewage plant driven by Westinghouse Life-Line® motor. 6. Brilliant nonglare lighting in Bank Street Tunnel, Seattle, Washington, using Westinghouse fluorescent fixtures and tubes.

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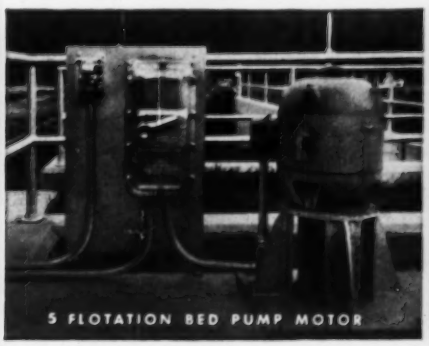
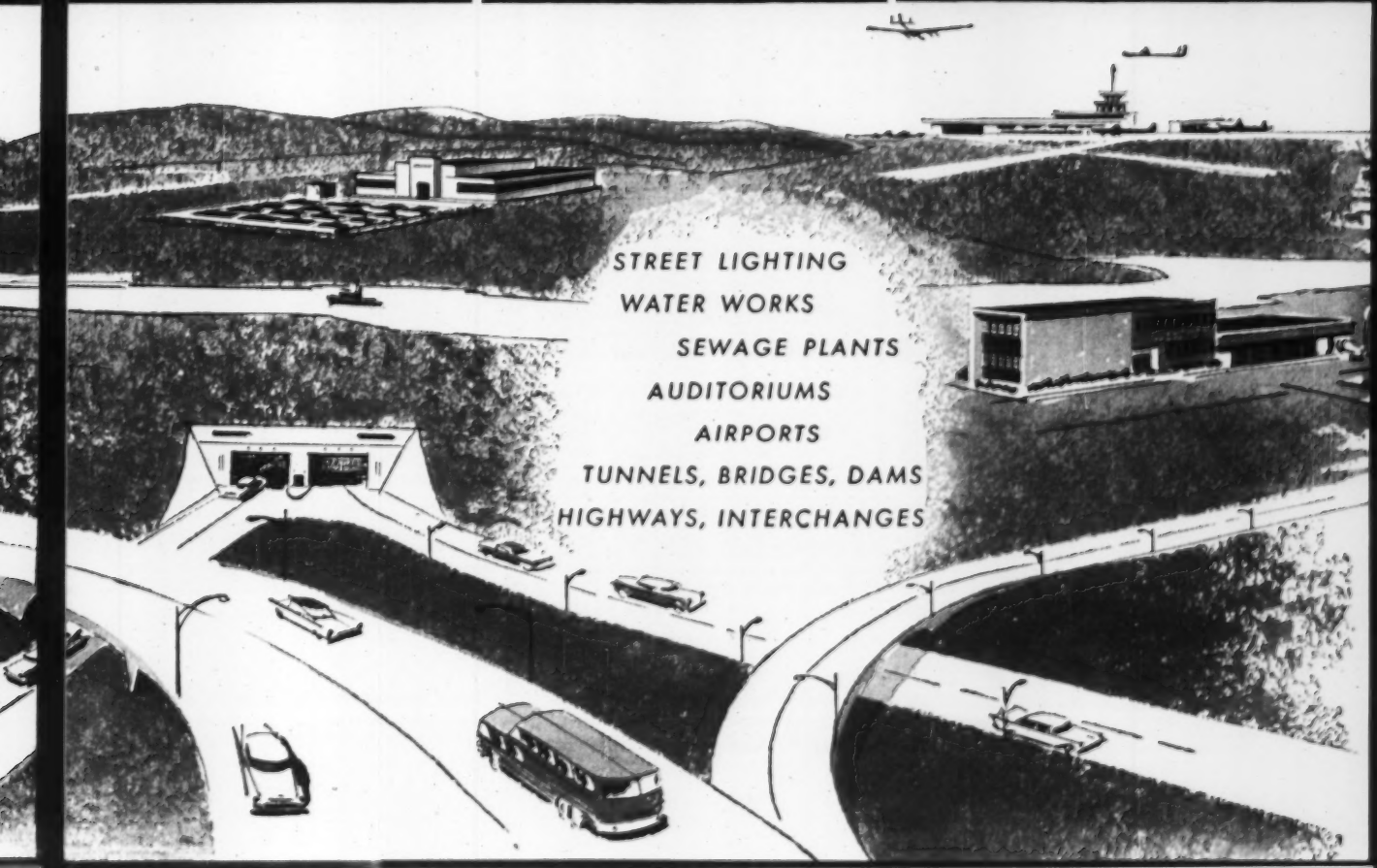
4 COMPRESSOR MOTOR — TUNNEL AIR SYSTEM



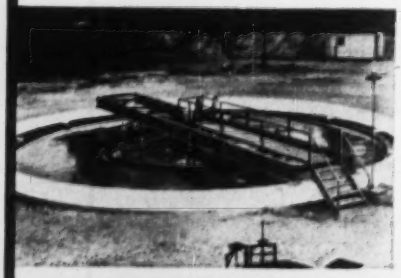
5 FLOTATION BED PUMP MOTOR

6 TUNNEL LIGHTING SYSTEM



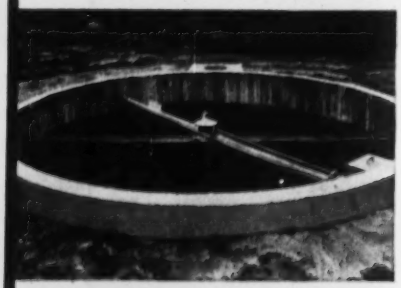
Yeomans manufactures the most complete line of Application-Designed sewage treatment equipment

which includes...

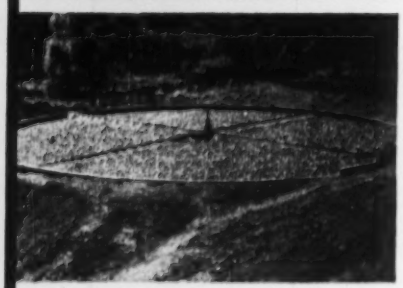


. . **SPIRAFLO CLARIFIER** for both primary and final clarification of domestic and process wastes. A clarifier of radically different design, the Spiraflo offers complete settleable solids removal; greater removal of finely divided particles; positive grease, scum oil removal; uniform velocity throughout tank; and straight wall design which reduces construction costs.

. . **the CAVITATOR,** a newly developed Yeomans unit for low cost treatment of both domestic sewage and industrial wastes. Perfectly suited for small communities, subdivisions, motels, resorts, schools and industrial plants, the Cavitator has excellent purification efficiency, extremely high oxygen transfer efficiency, and extremely low air requirements per pound of B.O.D. removed.



. . **the WATER-WHEEL,** a rotary distributor used with trickling filter systems in the secondary treatment of sewage. An exceptionally rugged, yet simple piece of equipment, the Water-wheel provides uniform distribution over the entire filter bed at all flow rates . . even the lowest. Costly accessories such as underground feed pipe, dosing chamber with siphon, center support, and mercury seal are not required.



. . **YEOMANS ROTARY DISTRIBUTORS** (both standard rate and high capacity). Standard rate units distribute evenly across the entire filter bed . . adjustable nozzles produce fine, well-aerated spray which carries down high volumes of oxygen. For high capacity filters, both the Yeomans high capacity type distributor and the Aero-Filter system are available.

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manufacturers of: distributors • clarifiers • mechanical aerators • pneumatic sewage ejectors • digesters • centrifugal pumps

. . . Reader Comment

your recent issues is an unfortunate example of such application. It had its prototype in the failure of an experimental girder tested at the University of Illinois. However, this failure was not greatly emphasized, but made such an indelible impression on my mind, that it has governed my attitude towards diagonal tension more than any other fact.

It seems to me that if a shrinkage crack occurs at or near the inflection point, failure could be prevented only if the crack took the proper angle or the beam had enough shear reinforcing to carry all the shear. With a crack at the inflection point practically a true hinge is developed, and the reinforcing must be adequate to transfer the load in shear. Most effective for this purpose are trussed bars or stirrups spaced very closely and securely anchored to top and bottom reinforcing. At least two bars should be carried throughout the top of the beam and tied with stirrups that are at no place spaced farther apart than the depth of the beam. With trussed bars, continuous top bars could be omitted in some cases.

There has been too much emphasis on the strength of concrete in tension. This strength, in my opinion, is not consistent, especially in regions where diagonal tension is the dominating stress, and where a shrinkage crack may effect a complete separation of component parts.

I have designed and constructed many buildings in reinforced concrete of perhaps the shallowest construction ever used for floors and roofs, without encountering any disturbing deflections or any other disturbances. But in the design for diagonal tension, I have placed very little reliance on the concrete regardless of its cylinder-test strength, unless there was no possibility of a weakness being introduced by shrinkage or of vulnerability due to either carelessness or neglect or misunderstanding.

I would like to comment also about the series of accidents on jobs in construction. It has been my experience that a minority of contractors rely on the judgment of their superintendents for the adequacy of shoring and extent of re-shoring, rather than heed the advice of engineers, let alone employ engineers to either design or check their work.

Most of the troubles can be laid to insufficient bracing, both lateral and diagonal. I have seen 4x4-in. wood shores, 16 ft long, supporting a tributary area of 50 sq ft, braced only in one direction with the lightest possible members. Written protests usually

By changing the character of hormones and genes science may increase tremendously the size of fowl and domestic animals . . . put more meat at less cost on the American table.

100 years from now...

WE MAY RAISE CHICKENS AS BIG AS OSTRICHES!

How will we live, eat, travel in the future? Even scientists must include some guesswork in their predictions of the marvelous things to come. But one thing seems certain—water and gas will still be carried by the dependable, long-lasting cast iron pipe laid today. Here's proof! More than sixty American cities are still being served by cast iron water and gas mains over a century old. And today's modernized U. S. Pipe... centrifugally cast, quality controlled... is even stronger, tougher, and more durable.

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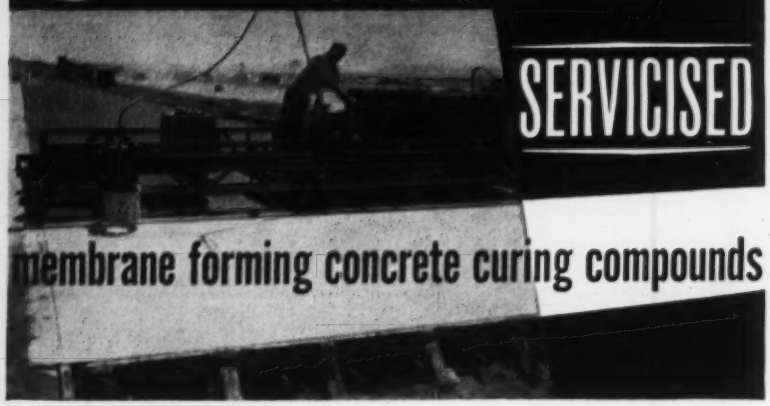
6 reasons for specifying and using SERVICISED membrane forming concrete curing compounds



1. Provide lowest unit of moisture loss
2. Meet official specifications for each particular type
3. Sprayed or painted on vertical surfaces, they will "stay put"
4. Save time, labor, material
5. Will not cake in the drum
6. Guaranteed uniform quality and results

WHITE PIGMENTED TYPE — Servicised White Pigmented Curing Compound provides a film or membrane capable of reflecting heat. It is widely used in areas where atmospheric temperatures exceed 80°F., and properly applied, will reduce concrete temperatures approximately 15°F. Excessively high temperatures during the early hardening period tend to jeopardize setting of concrete and reduces its final strength. High quality inert pigments added to the basic compound also prevent too thin or uneven coverage, as improper application is readily seen. Used on all U. S. Engineers work.

CLEAR TYPE — Servicised Clear Curing Compounds are available in both Wax-Resin and Resin Base Types. Only pure synthetic resins are used with carefully controlled proportions of oils and waxes, etc., in a petroleum solvent to insure a clear, impermeable membrane. Both types can be supplied with a fugitive dye which materially assists in securing proper coverage, and which disappears after application.

WAX-RESIN BASE. A general purpose compound, usually used on mass concrete, pavements. Has excellent water retention properties, allowing slow curing of the concrete which eliminates checking. Dries rapidly and forms a film of uniform texture.

RESIN BASE. Recommended for buildings, offices, architectural concrete, etc. The pure resins, oils and other ingredients present a clear film which does not materially alter the appearance of concrete and it permits early application of adhesives, paint, etc.

AIR ENTRAINING AGENT — Servicised Air Entraining Agent is a highly active, homogenous and clear solution. A relatively small quantity produces maximum air dispersion, yet it is not so critical as to create wide fluctuations in the amount of entrained air should slight variations in the amount used occur. It will not settle out in storage or gum the dispenser, and its action is not jeopardized by the presence of Calcium Chloride. Servicised Air Entraining Agent meets all official specifications, comes ready to use and requires no additional ingredients or treatment before being used. Available in 5 gallon and 55 gallon drums.

Write for special circulars on Curing Compounds and Air Entraining Agent

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. . . Reader Comment

result in only temporary compliance with an improvement in the situation. Only provisions in codes that all shoring must be subject to the engineer's approval can cure situations of this type.

DAVID B. CHESKIN
Consulting Engineer
Chicago, Ill.

Miscalculation?

SIR—The Oct. 25, 1956, issue of the Engineering News Record, there is a very interesting article on soil cement installation on a 13-acre parking lot that cost less then $1.00 per sq. yd.

A little multiplying yields some very amazing figures. The article states 15,000 barrels of Portland Cement was used on this 13-acre parking lot. Thirteen acres contains approximately 63,000 sq yds, thus presumably this contract would not have been over $63,000.00.

Fifteen thousand barrels of cement carload price runs approximately $3.75 per barrel which calculates that the cost of the cement alone delivered, job site, is approximately $56,500.00.

The $64 question is how can this contractor supply $56,500.00 worth of cement for a contract that will gross approximately $63,000.00. I would be very interested in finding out where the decimal was misplaced.

I believe a more realistic figure would be 5,000 barrels of cement on a thirteen acre parking lot instead of 15,000.

CHARLES N. DEBES
Professional Engineer
Rockford, Ill.

[EDITOR'S NOTE: Mr. Debes is correct—for a 13-acre plot, the figures are amazing. However, for a 26-acre lot (which is correct) they're not so bad.]

CALENDAR

Wire Reinforcement Institute, Inc., The Jung Hotel, New Orleans, La., Nov. 26-27.

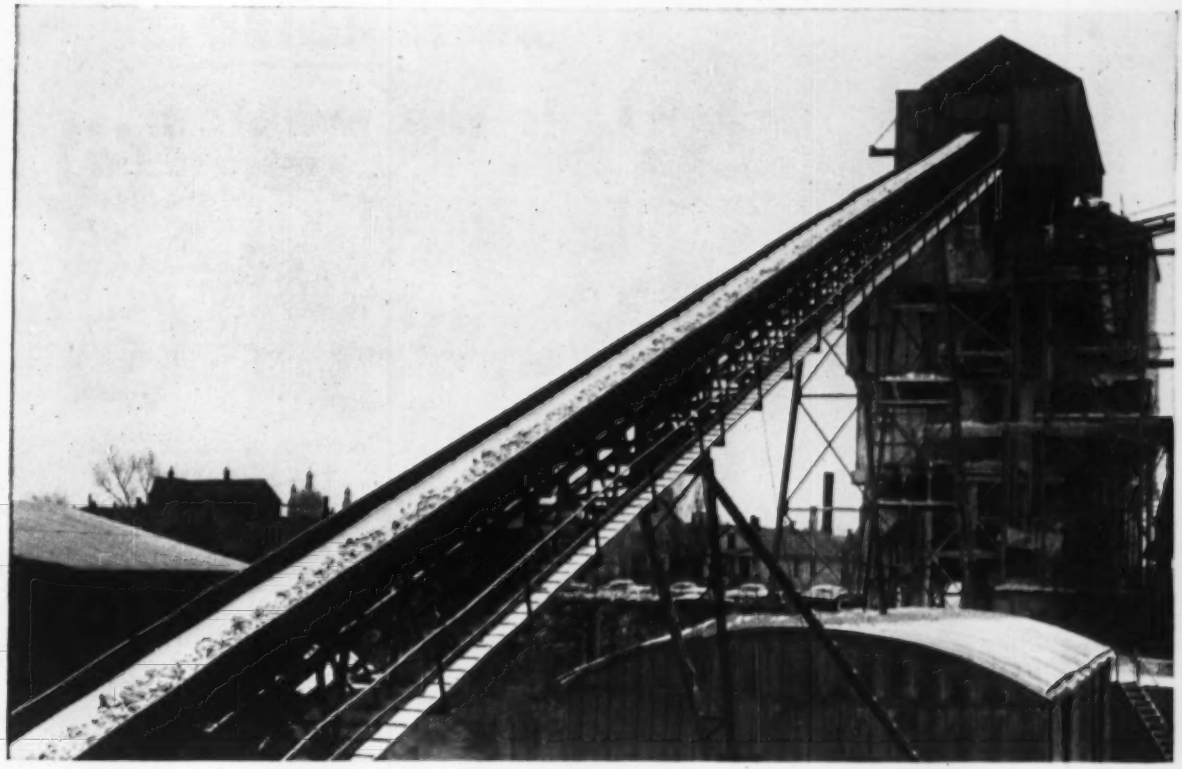
International Road Federation, Regional Conference, Antigua Guatemala, Nov. 26-30.

American Association of Staff Highway Officials, annual meeting, Hotel Traymore, Atlantic City, N. J., Nov. 27-30.

Fourth Illinois Structural Engineering Conference, discussions on steel and concrete specifications, one-story building foundations and high-strength structural steel, University of Illinois, Urbana, Dec. 3-5.

Illinois Institute of Technology, Modern Builders Conference, Prudential Building, Chicago, Ill., Dec. 6-7.

American Road Builders Association, annual meeting and road show, Chicago Amphitheater, Jan. 28-Feb. 2.



Barber-Greene Idlers provide extra years of low cost operation . . . the ultimate in belt protection.

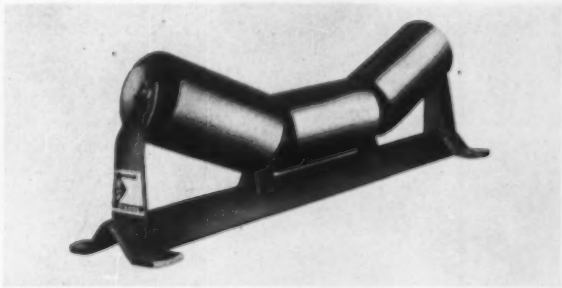
Barber-Greene Idlers . . . still rolling after twenty years

Installed 20 years ago, Barber-Greene Idlers are still rolling at this Material Service Corporation plant in Chicago.

There are no secrets behind the long-life records established by Barber-Greene Idlers. Advanced design plus top-quality materials, plus precision manufacture with the most modern production machines make the difference. The user benefits in lower maintenance costs, less down time, and longer idler life.

Barber-Greene advantages include virtually unbreakable jig-welded base frames, self-shedding base angles, interchangeable rolls made of heavy steel tubing, seamless steel grease reservoirs of ample capacity, and two-degree tilt to facilitate belt alignment.

Whether it's a ball bearing unit for normal service, or a roller bearing unit for the most rugged conditions, Barber-Greene has the idler that's right for any conveyor . . . right for any job.



Available in widths from 16" to 60", with 4", 5", or 6" rolls, the Barber-Greene line includes standard troughing carriers and return rolls, flat belt and picking table carriers, self-aligning carriers and return rolls, grain idlers, rubber impact carriers, and self-cleaning return rolls.

Write for literature on the complete Barber-Greene idler line.

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Cutting the New York State Thruway past Suffern, N. Y. required a 112-hole side hill shot only 100 ft. from houses. Using Atlas explosives and techniques, the 1,100 lb. blast was set off with few townspeople realizing it!

Carving the Schuylkill Expressway close to Philadelphia homes and factories brought the order, "hold down noise and vibration." The Atlas ROCKMASTER® millisecond delay pattern triggered an efficient, muffled blast—held the "good neighbor policy."

Blasting along Central Avenue with the eyes and ears of Yonkers upon you calls for Atlas millisecond delays in an alternate pattern. Results: excellent breakage with no loud air snap . . . ; no complaints.

when NOISE is the problem...

PROLONGED CONFINEMENT COUNTS

Atlas explosives and Atlas methods . . . *the right cost-cutting combination*

THE right combination of Atlas explosives and techniques provides *prolonged confinement* of explosive force—results in better throw control, improved breakage, minimum noise and vibration.

Before your next blast, why not talk over the specific problems with your Atlas representative. He'll help you get the best all 'round results. And write for "Better Blasting"—Atlas' informative newsletter on latest methods and materials.

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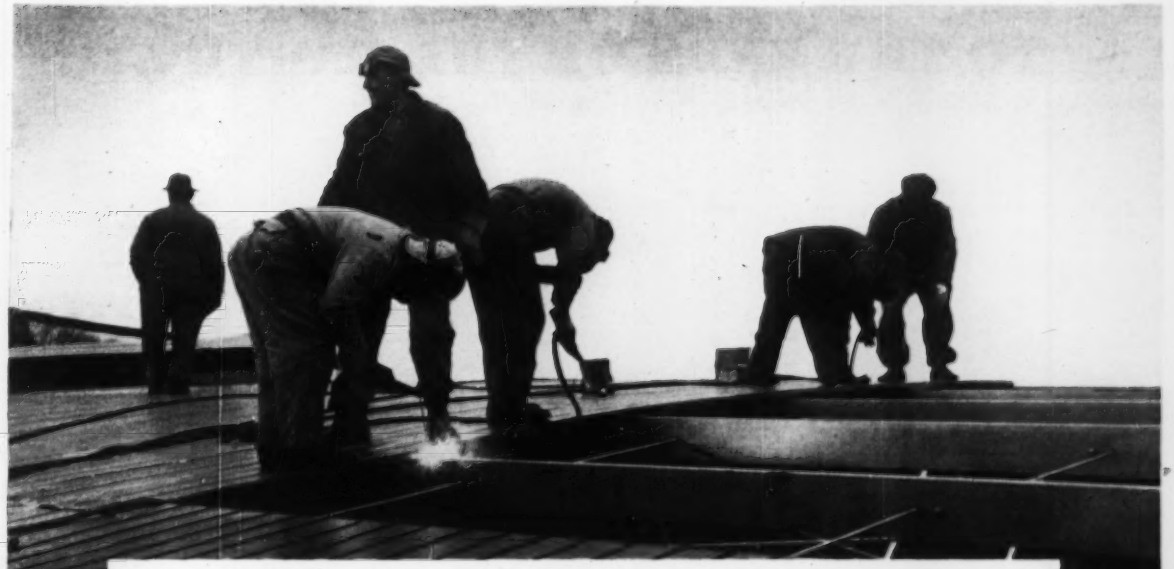


High strength/weight ratio of Wheeling Tri-Rib Steel Roof Deck cuts dead load 8 to 10 lbs. per sq. ft.

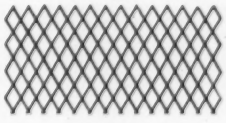
This adds up to real savings at no sacrifice of strength. Because as a result less structural steel is needed . . . as much as 20% less! It's *lighter*, it's *stronger*, it's *more economical!* And Tri-Rib Roof Deck is made of Cop-R-Loy Steel for long, dependable life. Qualifies for fire resistance rating as specified by leading insurance companies. Send for details or see our catalog in Sweet's.

Designed in accordance with specifications adopted by A.I.S.I. for light gauge structures, dated January, 1949

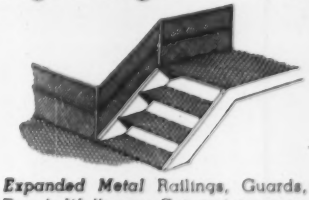
Wheeling

Use these other Wheeling products for economical, long-lasting construction

Corrugated Culverts—Copper steel or pure iron. Complies with Federal and all state specifications.



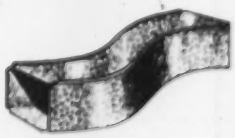
Steelcrete Expanded Metal for Reinforcing — Distributes concentrated loads over a larger area.



Expanded Metal Railings, Guards, Treads, Walkways. Cuts maintenance. Permits full visibility and ventilation.

Gutters and Leaders—Heavy pure zinc coating. Provides long life, rust-resistance, sure protection.

Metal Lath—Provides the best plaster bond for crack-free walls, complete design flexibility.



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ENGINEERING NEWS-RECORD

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CONTENTS

NATIONAL AFFAIRS

A Hard Look at Resource Policy 21
Are Windows Worth the Cost? 23
Six-Story Lift-Slab Is Completed 24
Heaviest Lift-Slab Forms Roof 25
Riggers' Skill Folds Damaged Tower 26
Niagara Power Question Goes Before FPC 27
Memphis Reveals Steam Plant Details 27
Biggest Hall for Biggest Road Show 27
Bolting Begins for 38-Story Building 28
New York to Remain Headquarters of Engineering Societies 29
Certification of Sanitary Engineers Becomes Reality 29

FEATURES

Building a Drydock to Hatch an Aircraft Carrier .. 32
Asphaltic Membrane Is Used to Leakproof a Lake 40

NEW PRODUCTS

Steel Doors Come With Thresholds, Frames 43
Ripple Pattern Enhances Sheet Copper 43
Simple Beam Compass Draws Ellipses, Circles 43

MEN AND JOBS

Reclamation's E. R. Crocker Retires 45
Europeans Gather U. S. Know-How 45

INTERNATIONAL

Shopping ALroad for Engineers 48
Argentina to Resume Work on Las Maderas Dam. 48

RESEARCH

Western Lab Checks Hydro Designs 53

BUSINESS AND FINANCE

Homebuilders Face a Changing Market 77
Construction Market: Hartford 78
Ohio's Office Needs to Be Studied 80
Florida Gets $100-Million Bond Boost 80
Buyers' Market Again as Bond Prices Drop 81

LABOR

Taft-Hartley Shapes Up as Key Labor Issue 85
Court Case Tests Bargaining Rights 86

Reader Comment 6
Calendar 12
Washington Observer. 19
Obituaries 44
Unit Prices 56
Materials Prices 58
Construction Reports .. 61
Scoreboard 75
Editorials 100

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THE CONSTRUCTION WEEK

MONEY COMING IN—The Treasury Department now estimates that highway tax receipts in the current fiscal year of 1957 will bring in an additional $612 million because of raises approved by Congress in the highway bill. The Treasury adds that total annual receipts from all highway taxes will rise to an estimated $3.182 billion by 1962. But there's a cloud on the scene: rising costs of materials, as reflected by contract prices in the third quarter of 1956. The Bureau of Public Roads said it recorded a rise of 3.8% on top of a 2.3% increase in the second quarter. Government officials looked at the report warily—fearing that a lot of highway work would have to be refigured.

INTERSTATE POLLUTION ENFORCEMENT—Interstate Commission on the Potomac River Basin will consider recommendations—made by governors of two of its member states—to seek authority to issue pollution enforcement orders. Now, like all other interstate sanitary agencies except the Interstate Sanitation Commission in New York Harbor and the Ohio River Valley Water Sanitation Commission, the Potomac Commission has advisory powers only. Meanwhile, ORSANCO recently resolved to go ahead with its first enforcement action—against the City of Gallipolis, Ohio, which has already beaten down a state enforcement action in the courts.

FOR THE MANPOWER SHORTAGE—Last week's Thomas Alva Edison Foundation meeting, on the engineer and scientist shortage, heard a new suggestion on the special problem of talent being wasted. Rear Admiral H. G. Rickover of the Atomic Energy Commission called talented youth "our most precious national asset" and suggested that industry and the educational foundations should set up model academic secondary schools in perhaps 25 different centers in the U.S. Capable teachers with small classes of talented children, Rickover says, could demonstrate what can be done toward making our schools as good as anybody's.

PEACE ON THE STREETS—In an attempt to end rows with abutting property owners, Louisville city officials are discussing new rules for street building assessments. What's being planned by Mayor Andrew Broaddus is the setting of two minimum widths for residential streets—one 26 ft, where the abutting homes have driveways and provide off-street parking, and the other 32 ft, where abutting homes do not provide for off-street parking space. The issue of street widths has been a hot one in Louisville for several months. The city in various instances has ordered streets built 30, 32 or 36 ft wide over loud objections from property owners who felt they should not have to pay for more than 26 ft., which is general width of residential streets at the present.

On Route 4, north of Sleepy Eye, Minn., Berghuis Construction Co.'s Adams 550 grades fill in 3rd gear (4.5 mph).

When traffic over a narrow, hump-backed 17-mi. section of Minnesota State Route 4 — from Fairfax to Sleepy Eye, Minn. — grew too heavy for safety, the State Highway Dept. decided to rebuild it. Berghuis Construction Co., Prinsburg, was awarded the earthmoving contract. The roadway was to be widened, ditched, and regraded to make driving safer, and to permit heavy commercial traffic.

Berghuis split the 465,000-cu. yd. dirtmoving job between two work groups. Three crawler-drawn 19-yd. LeTourneau-Westinghouse BT scrapers worked ahead, cut down high shoulders and cleaned drainage ditches. Then two 23-yd. B Tournapulls and three 16-yd. "C's", push-loaded by 2 crawlers, hauled sandy-clay fill to build new grade. (Current models have 25 and 18-yd. capacities.) Tractor-pulled LeTourneau-Westinghouse 120 and W-2 sheepsfoot rollers compacted the fill. Three motor-graders handled the grading (50% was done by an Adams 550). A rubber-tired Tournatractor and a crawler were assigned miscellaneous dozing, casting, and finishing jobs. Work was completed in the scheduled 120 working days.

Mobility and speed of heavy-duty grader boosts Berghuis fleet production

Berghuis Construction Co., Prinsburg, Minnesota, helps speed dirtmoving, and keep all units of its production "team" working at top capacity with a versatile Adams 550 motor grader. On a 17-mile highway contract—improving Minnesota Route 4—Berghuis used "550's" 8th-gear-speed of 25 mph to move the machine quickly from one job to another... whenever and wherever needed. This Adams grader spread fill behind self-propelled scrapers, leveled the new road surface, formed shoulders, and cut ditches and bankslopes. It kept 600′ to 800′ haul-roads smooth for Tournapull scrapers traveling at 16 mph on 3 minute cycles.

Owner Delwin J. Berghuis, happy with the performance of his "550" . . . says, "I like the speed and maneuverability of the Adams, and feel that it has done a great job for us. On the Route 4 project it helped put us ahead of schedule."

8 forward, 3 creeper, 4 reverse speeds get more work done, faster, at lower cost

On the Adams 550, constant-mesh transmission provides a range of 8 standard speeds forward, from 1.4 to 25.2 mph. With 4 standard working speeds under 6.5 mph, you blade, ditch, mix, and bank cut at time-saving production speeds. Lighter work, including off-season contract snowplowing, is done in 5th and 6th. The two top gears — with speeds to 16.1 and 25.2 mph — cut travel time between chores, speed grader job-to-job.

Three optional creeper gears — 0.25 to 1.76 mph — afford very slow speeds for fine-grading and close-quarter maneuvers. They give you smooth control and extra power to rip hard-packed roads and old asphalt. Creepers also reduce heavy shock loads in working through rocks and roots, eliminate "slipping the clutch".

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WASHINGTON OBSERVER

The first official estimate of 1957 construction: 5% up from this year. Commerce and Labor Department experts this week say that next year should put total construction spending up to $46.4 billion compared with the latest estimate of $44.125 billion for calendar 1956.

This year's dollar volume is a 2.6% increase over last year. This represents an actual decline in physical volume of new construction put in place, since price increases, i.e. construction costs, have gone up 4 or 5% over the same period.

Similarly, next year's increase is expected to reflect higher costs with physical volume of work remaining about the same as this year.

Housing will drop again next year the experts say. Their figuring puts spending on new dwellings down to $12.7 billion—based on 1-million starts next year.

By contrast, utilities will up their spending by $670 million next year, for a total of $5.75 billion.

Road construction, water resources development, sewer and water works are all to show increases. Total increase: $800 million.

•

Housing has to be helped, says Raymond J. Saulnier, new chairman of the Council of Economic Advisors. He succeeds Arthur Burns and is expected to hold with Burns' general economic views, but Saulnier, who has made housing and construction a specialty, is already saying that housing has to be encouraged so that the industry doesn't suffer more from the money shortage.

Odds now favor an increase in FHA mortgage interest rates—probably to 5% from the present 4½%—as the homebuilders and mortgage bankers have been asking for months.

The Administration can boost the FHA interest rate on its own but it will face a fight in Congress when the lawmakers are called upon to raise VA interest rates from the present GI maximum of 4½%. Without such an increase to go along with a higher FHA rate, VA mortgages just wouldn't find any lenders.

•

The lease-purchase program is in danger of being dumped. Key officials—including those who favored it from the beginning—are having second thoughts about the effectiveness of this method of getting needed federal buildings constructed.

Trouble is that the program has had difficulty getting off the ground. Though it has been under way for two years, so far, General Services Administration has only one building under construction.

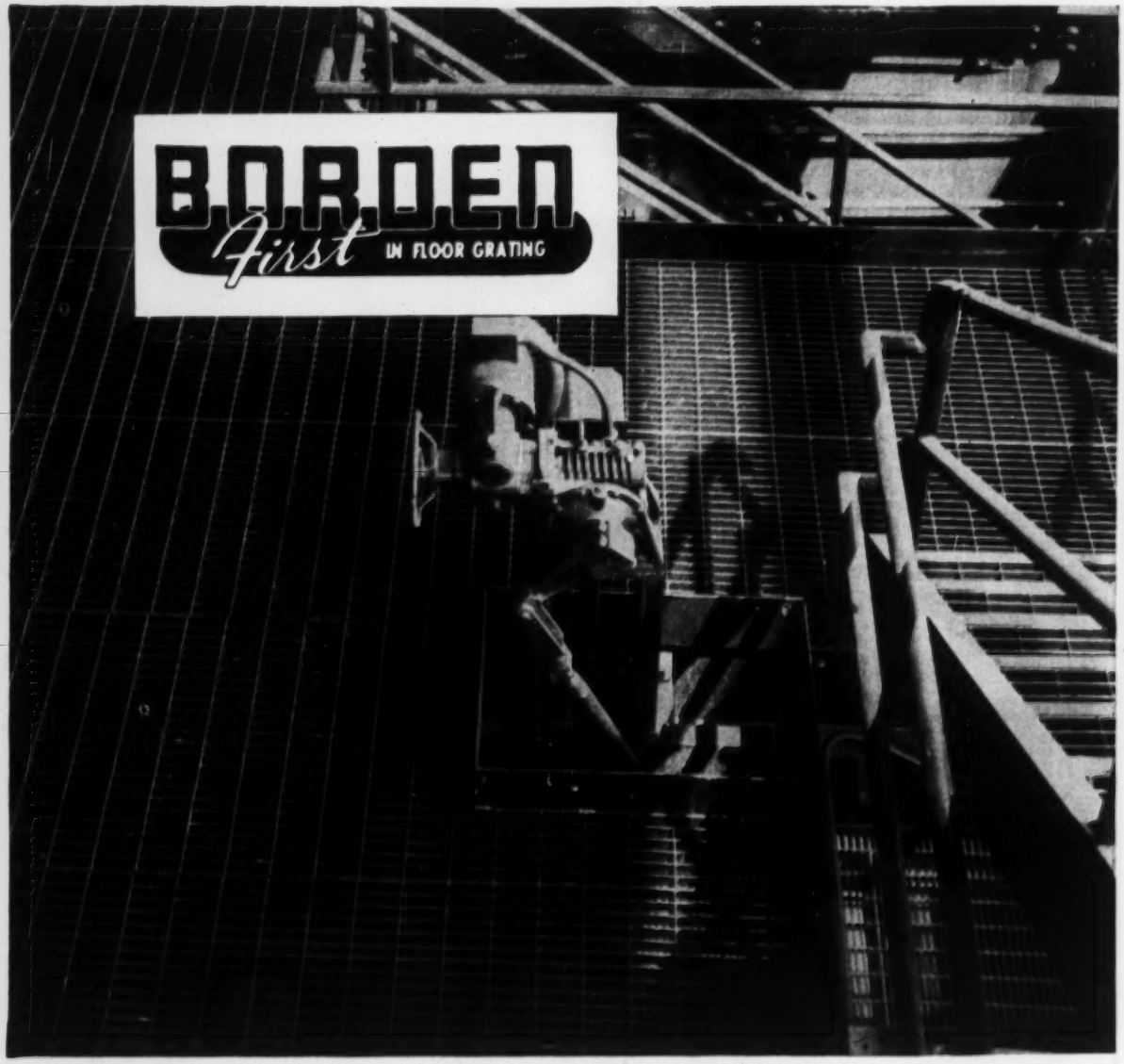
Result is that the $700-million backlog of federal buildings is in danger of becoming blocked at the crucial point: Investors just aren't bidding on the lease-purchase kind of deal.

Purpose of the program is to keep federal spending down by drawing on private investment funds. While the buildings ultimately cost the federal government more (because of interest payments over 10 to 25 years), the annual addition to the federal budget was to be small compared to the outlay if the buildings were paid for cash on the line as they are built.

Next test of lease-purchase comes December 20 when six bids will be opened under the just-announced revision of GSA rules: only combination financing-construction bids are accepted. This should show whether the program can be carried forward with a 4% interest rate ceiling under today's conditions.

•

Correction—The item appearing in this column Nov. 8, concerning tests of runway pavements at Kelly Air Force Base erroneously stated that asphalt design and construction were controlled by the Asphalt Institute. Actually, the pavements were built to Corps of Engineer specifications, and Corps personnel supervised the construction. Asphalt Institute personnel were observers.



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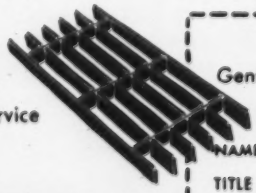

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Partnership in Resources Development:

Before election → Eisenhower's policy favored no federal dam-building if local interests would undertake the work

Administration ponders whether Republican setbacks in west mean dissatisfaction with the concept of partnership . . . OR its execution ← ***After election***

A Hard, New Look at Resource Policy

The Eisenhower Administration's controversial partnership policy in natural resources development, and especially in electric power generation, is getting a careful reappraisal in Washington.

This reappraisal is the result of a series of Election Day setbacks suffered by hand-picked Administration candidates throughout the West. Many local campaigns were pitched almost exclusively on the merits of partnership.

One of the Administration's big problems is to decide whether the adverse vote means dissatisfaction with the concept of the partnership policy or with its execution—whether the voters responded to Democratic charges of "giveaway," or "underdevelopment." Or the Republicans may decide partnership lacks popular support because they haven't explained the complications of its execution well enough.

As of now, there are no signs that the basic concept of partnership is to be dumped quickly or with any dramatic flourish. Only a week ago in a speech before the National Reclamation Association, Interior Secretary Fred A. Seaton said, "We have several proposals ready for consideration by the next Congress which provide for partnership development of multipurpose structures. We see no reason to inflict the whole burden of financing these projects on the federal government wherever and whenever non-federal interests are willing to assume a share. So long as the public interest is protected, the end results are the same."

I. Partnership Defined

The Eisenhower partnership policy is an umbrella that covers just about the whole spectrum from all-private to all-federal financing of public works aimed particularly, but not exclusively, at multipurpose hydroelectric projects in the West. Basically, the philosophy has been to encourage non-federal financing wherever possible.

Its purpose has been many-fold: to decentralize as much as possible federal dominance of public works developments; to shift as much of the cost as possible away from the federal budget; to have the beneficiaries take the responsibility—financial and otherwise—for the development of public works projects; and to get needed projects built as quickly as possible.

Thus, the partnership umbrella covered the Dixon-Yates proposal to take care of TVA's growing power needs outside the federal budget. It also covers a proposal, that seems likely to prevail, to give TVA authority to issue its own bonds to finance the expansion of power capacity.

Partnership also covered the Administration's proposal to have U. S. Steel Corp.—or private interest—pay part of the cost of deepening the Delaware River to permit ore boats to reach U. S. Steel's Fairless Works near Trenton, N. J. Similarly, the Administration backed the repeal by Congress of its earlier authorization of a federal power project on Coosa River in Alabama. Congress had failed for several years to appropriate any money for construction. Alabama Power Co. now has an application before FPC to develop the site; routine approval is expected.

Partnership took a slightly different meaning as applied to the $34-million Markham Ferry project on the Grand River in Oklahoma. A state body, the Grand River Dam Authority, was licensed for the power development, but the federal government is staying on with a contribution of $6.5 million for flood control.

Authorization and first appropriations for the huge Upper Colorado storage project indicates willingness by the Eisenhower Administration to take on an all-federal development when there is no chance that non-federal interests will help finance the job.

Partnership has come to have a more precise meaning in the development of hydroelectric sites. The partners are the federal government—to finance the non-revenue production end of the projects—and private or local public interest to finance the power producing part of the installation in return for 50-year rights to the power.

This has proven workable and acceptable to Congress (which must authorize the partnership proposal) in some cases but it has failed to win acceptance in others.

II. The Complications

The still smoldering controversy over Hells Canyon illustrates some of the complications of partnership. The low-dam scheme, proposed by Idaho Power Co. before the Federal Power Commission, was not objected to by the Eisenhower Administration in view of its basic philosophy and the fact that Congress through the years had shown no inclination to authorize or vote funds for a high federal dam.

FPC approved the private proposal, finding it in the public interest to proceed immediately with a reasonable proposal as compared with waiting for a possibly preferable but unlikely federal high-dam proposal.

This decision set off anew the opponents' charges of underdevelopment. Examination of the general reasoning

employed by FPC engineers with the help of other expert governmental people may shed some light on this question. Presumably, the federal high dam originally proposed in the Corps of Engineers "308" report on the Columbia River Basin was the most economical plan to achieve all of the multipurpose benefits envisaged. But there are, as river planners know all too well, many basin-wide schemes that will achieve the same benefits at only slightly increased cost over the optimum. Also, in the case of the Northwest, the end of the hydro era draws nearer which continually shrinks the optimum development plan for the basin, in effect giving it more flexibility.

So when FPC approves development proposals that differ from previously heralded "best projects," it attempts first to ascertain that ultimate planned benefits from the basin can be achieved in a scheme incorporating the new project, then it tries to determine that the additional benefits obtained from realizing the new project earlier than the previous best project are worth the additional cost, if any.

Thus, in the view of many river experts, while the Hells Canyon site will not be developed to its maximum (in terms of water storage) under the low-dam plan, this is detrimental only if every possible drop of Snake River water were to be eventually stored at ultimate development. This will in all probability not be the case.

The above, of course, doesn't settle the arguments. More detailed information in the case of the Northwest should be available in October 1957, when the Corps of Engineers is scheduled to complete its revised "308" report on the Columbia Basin. But at least it indicates that the multipurpose development of a basin receives serious consideration under the partnership execution.

III. Status of Key Project

Just which way the Administration—and Congress—will move in the next four years is not clear. One major "test" is coming by February. That's when the Bureau of Reclamation is to report on a proposal by Pacific Gas & Electric Co. to buy falling water and build power generating facilities at the Trinity River project in California. However, election results in California have dimmed PG&E.'s chances.

Congress authorized the $225-million project last session, but held power aspects in abeyance while the Interior Department negotiated with non-federal interests for sale of the water. Preliminary construction on non-power features is under way; a contract for the 450-ft earthfill dam is to be awarded in January.

Political stalemate has thwarted several partnership proposals farther north in the Columbia River Basin. Democrats insist on all-federal construction, in accordance with original basin development plans.

A foremost example of how partnership might work is the John Day project, on the Columbia River between the Dalles and McNary Dams. It was authorized as a federal project in 1949, but Congress has voted no money for it except nominal amounts for planning. Last session, a legislative attempt failed to get it started on a partnership basis—with the Corps of Engineers serving as construction agency and private power companies paying $273 million, for the power features, of a total $310 million, which included a navigation lock, fish ladders and a small amount of flood-control storage.

Now, Public Utility District No. 1 of Klickitat County, Wash., has an application before the Federal Power Commission. Presumably a similar joint-financing plan is contemplated. John Day's significance lies in the consideration of the Corps of Engineers as construction agent for predominantly non-federal interests.

Stalemate in Congress also has held up any action on Green Peter, Cougar and White Bridge projects in the Columbia Basin. Legislation was proposed last session to let non-federal interests develop power at these dam sites, but it got nowhere.

But while no joint federal-local projects were started in the Northwest since 1953, Grant County PUD's Priest Rapids project, previously planned as a federal dam, and, of course, Hells Canyon, were begun under the broader partnership concept. Local public and private utilities also began such power projects as Swift on the Lewis River, Mayfield on the Cowlitz River, Gorge on the Skagit River and Noxon Rapids on Clark Fork. And the federal government continued construction of McNary, Chief Joseph and the Dalles projects. Ice Harbor Dam was the only important federal start, and this was accomplished through the urging of navigation interests.

Because it was not clear just how partnership would work, Pacific Northwest power people were confused for some time. One responsible official said, "It took us two years to learn the ground rules."

But once it was understood that the federal government would allow local agencies to develop previously planned federal sites, the race to build major works was on.

IV. Future Policy

Politically, partnership suffered a heavy blow in the Nov. 6 election. Douglas McKay, former Secretary of Interior and partnership's principal architect, was an election casualty in Oregon, falling before Sen. Wayne Morse, partnership's chief critic. In Washington State, another hand-picked Administration Senatorial candidate, Gov. Arthur Langlie, was badly beaten by public power advocate Sen. Warren C. Magnuson.

Other Republican Senatorial candidates fell in Idaho, Colorado, Nevada and Arizona where power issues, although not as strident as in Washington and Oregon, were viewed as important. Moreover, seven of the ten House seats which Democrats picked up nationally were in the power conscious West—two apiece in Oregon and California, one each in Washington, Nevada and Montana.

Vice President Richard Nixon is understood on good authority to have told Eisenhower that western discontent

Status: Major Joint Local-Federal Proposals

Project (river state)	Cost (millions)	Proposed Arrangement	Congress has . . .
John Day Columbia, Ore.	$310	Private power firms offered to contribute $273 million	Refused to approve
Trinity Trinity, Calif.	$225	Interior Dept. negotiating with private utilities for possible power development	Approved non-power features; construction underway
White Bridge and Green Peter Santiam, Ore.	$58.4	Private utilities want power features at Green Peter and White Bridge	Declined to approve
Cougar Dam McKenzie, Ore.	$34.5	City of Eugene offered $10.5 million for power features	Declined to approve
Coosa River Coosa, Ala.	$121	Way seems clear for private power interests to develop	Acquiesced after balking at federal investment
Markham Ferry Arkansas, Okla.	$34	State Power Authority is paying $27.5 million for construction of power installations	Agreed to spend $6.5 million only, strictly for flood-control features

about power is at the root of the Administration's poor showing across the West on Nov. 6.

There is no inclination, however, to conclude yet that the Eisenhower Administration will do a sharp about-face and go all out on a big program of all-federal power development.

The current reappraisal of partnership is being undertaken with one prime objective: Find a way to get the key projects moving. If a hard look convinces the policy makers that compromise is necessary on some projects, a softening of partnership will show up not in any formal announcements, but by mere governmental acquiescence in all-federal development at certain sites.

What this means, of course, is compromise—the way Washington stalemates generally are worked out.

In summary, recitation of case histories shows that partnership, at best, is loosely defined. This has been, in large part, responsible for widespread misunderstanding of it. Whether the Eisenhower Administration's attempt to turn back the Federal power tide begun in the 1930s will succeed will probably be decided in the coming year.

Are Windows Worth the Cost?

Conference points up the problems arising from extensive use of glass and brings out need for window standardization

At a conference on windows and glass in the exterior of buildings, conducted by the Building Research Institute in Washington, D. C., last week, a strange paradox was presented. Architects spoke enthusiastically about building exteriors almost entirely of glass, but mechanical engineers warned that these transparent areas will have to be covered up—at least on the sunny sides of buildings—if air conditioning costs are not to get out of hand.

BRI planned the conference as a technical forum "to discuss and appraise the newest and most interesting developments in research and design" in windows and glass. The program contained four major phases:

1. Engineering for solutions to problems of daylighting, ventilation, control of heat gain and loss, and air conditioning.

2. Reports on the newest and most interesting developments in the engineering and use of glass products and the major types of windows and accessory devices.

3. Discussions of architectural and mechanical controls to attain environmental standards required by building owners and operators.

4. Architectural analyses of the newest designs with large glass areas for houses, office buildings, stores and shopping centers, and schools.

The papers and the discussion presented at the conference are being published by the BRI.

• **Need for standard windows**—Several speakers called attention to the need for standardization. William Gillett, vice president, Fenestra, Inc., Detroit, presented the window manufacturer's viewpoint:

"Varying the size and layout of windows is one of the architect's easiest tools for creating individualism in building facades, but at the same time it creates a situation in the window market that makes it virtually impossible for window manufacturers to introduce a high degree of automation in their plants. Consequently, the cost of all windows can be considered relatively high in relation to other building materials where mechanization is employed.

"If we, as an industry, are to give our customers improved window products at the same or lower costs than now prevail, we must forthrightly solve the riddle of varying extreme designs, even though window types and sizes are limited in number. In the residential market, there are literally hundreds of different types and sizes of windows, and in the nonresidential field, a large percentage of windows have no standardization whatever."

William Demarest, Assistant Director, Construction Department and Research Institute, National Association of Home Builders, Washington, D. C., summarized NAHB objectives in standardizing residential windows:

"Our purpose is to foster development of a very few stock sizes for windows in homebuilding that will be best coordinated with the other pieces with which they must fit, so as to accomplish two things: (1) Ease and economy of installation, and (2) A reduction in the number of stock residential sizes called for by homebuilders. It is logical to expect that this will reduce manufacturers' costs in producing and stocking windows and—it is hoped—ultimately result in a lower unit delivered price, as well as a lower in-place cost."

Lack of standardization of windows also affects adjoining construction and associated installations. For example, Sterling S. Bushnell, vice president, Breneman-Hartshorn, Inc., Cincinnati, pointed out:

"With the present lack of unformity, the manufacturer of blinds or shades is confronted with an almost limitless variety of widths and lengths, which means that most shades must be made to measure for the particular job . . . this whole question of standardization in the field of interior controls is one which has been talked about at great length for many years, but very little seems to have been accomplished . . ."

At present, efforts are being concentrated on standardization of residential windows (ENR, July 26, p. 120).

• **Windows vs cooling costs**—Though many architect speakers extolled the virtues of large windows, Alfred L. Jaros, Jr., consulting engineer, Jaros, Baum & Bolles, New York City, was much less enthusiastic. In most buildings, he said the radiant heat from the sun, entering through windows, is one of the largest determinants as to how large and costly the cooling system must be. Even more important, it is the largest factor that is readily amenable to preventative treatment; it is usually much cheaper to keep heat out initially than to remove it after it gets in.

To limit heat gain due to solar radiation, Jaros argued, windows should be either well shaded or their areas should be the smallest acceptable. Even with blinds or shades, every needless square foot of glass, except on the north, will probably add $10 to $15 to the cost of installing good air conditioning, he said.

Jaros had this to say about the various methods of shading now in use:

• The old-fashioned canvas awning on the southside of a building can do more to reduce cooling demand than most combinations of heat-absorbing glass and Venetian blinds.

• The performance of such awnings can be improved by making them light in color on the southside and by providing a ventilating slot at the top.

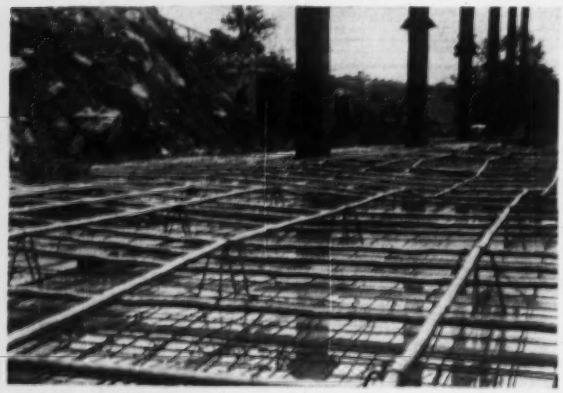
• Modern types of ventilating awnings built of aluminum or plastics will do as good a job as the canvas awning.

• Unfortunately, all of these—as well as the old-fashioned "wooden slat shutter" outside the window, which is also quite effective—suffer from a common and grave defect: they must be manipulated perhaps at several hundred distinct points in a building, and to do this, the windows must be opened and closed.

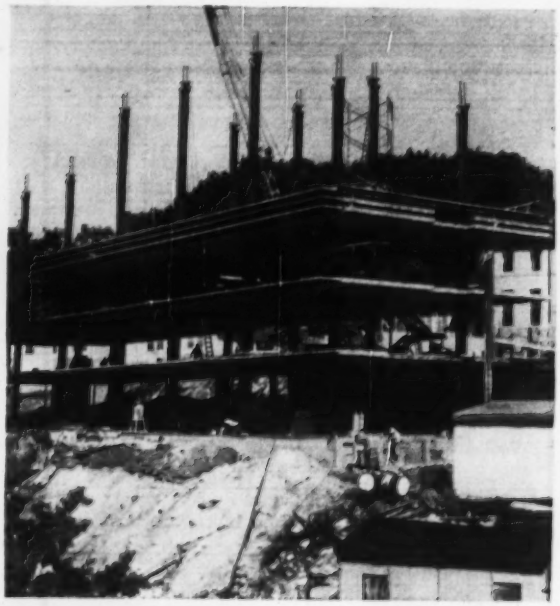
• For orientations where the sun is high in the sky (south facade in the northern hemisphere), projecting balconies or cornices can be arranged to do as effective a job as any sort of awning. However, this method of shading is less useful on easterly exposures, and almost useless on westerly, since late in the afternoon the sun sinks low.

• For east and west directions, the best shading methods are metal or concrete "jalousies", several feet out from the building or various schemes of vertical louvers.

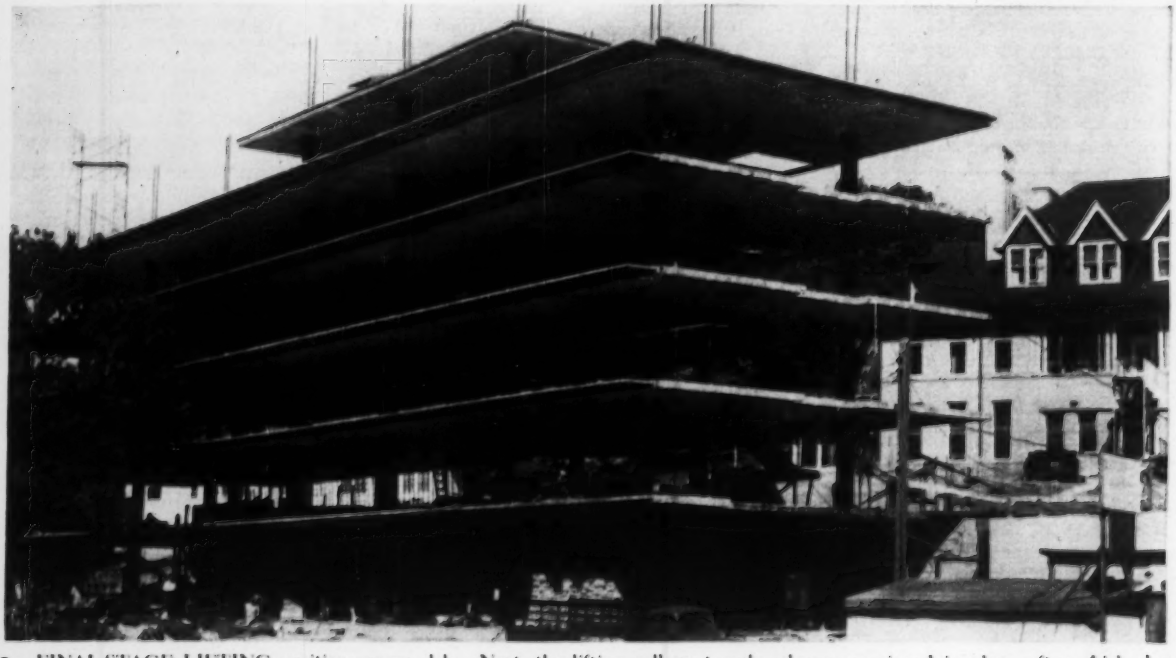
New in Lift-Slabs—Six Stories of Prestressed Slabs Raised . . .



1. CABLES laid in flexible sheathing are draped to vary the prestress in the floors and roof of the Litchfield County Hospital addition at Winsted, Conn. These slabs were formed at grade.



2. FIRST-STAGE LIFTING raises upper slabs to the top of the first tier of columns; then the second column tier is erected.



3. FINAL-STAGE LIFTING positions upper slabs. Next, the lifting collars at each column are pinned in place, after which shear blocks are welded to the columns and collars to anchor the slabs. The floors are 8½ in. thick, span 26 ft.

Six-Story Lift-Slab Completed

New England Lift Slab Corp., Boston, has raised the six prestressed slabs that form the floors and roof of the 62-ft-high addition to Litchfield County Hospital, Winsted, Conn.

The techniques used were described in detail in ENR Feb. 2, p. 43. The lifting was originally scheduled for last March but was delayed by delivery of steel columns, of which 14 were required. The columns are spaced 26 ft apart.

The slabs were cast at ground level, then raised with jacks atop the columns. Five are 182x43 ft; an irregular shaped one, 80x41 ft, serves as the solarium roof. All are 8½ in. thick. Concrete used was specified to have a 28-day compressive strength of 4,500 psi.

Cables for prestressing the slabs transversely and longitudinally consist of ten 0.196-in. dia wires in 1¼-in. dia flexible sheathing. The tendons are draped in a vertical plane to be near the bottom of the slab at midspan and near the top at the columns.

The tendons were placed in sheathing to prevent bond with the concrete initially. After the concrete attained sufficient strength, the wires were tensioned with a double-acting jack, the tendons being pulled in one step and a conical wedge being forced into place to

anchor them in the second step. Then, the wires were grouted in place.

The slabs were designed for live loads ranging from 40 to 180 lb per sq ft, the lightest loads being for the wards and the heaviest for radiography areas, where floors, walls and ceilings will be lead-lined. Also, movable equipment in this area will be extremely heavy.

The lifting operations were carried out in two stages. The first tier of columns erected was only 35 ft high. Lifting began with the jacking of the upper three slabs to the top of these columns. Then, the second, first and ground-floor slabs were raised to their final positions. After the columns were extended another 25 ft, the three upper slabs were raised to their permanent places. A penthouse for mechanical equipment is being erected atop the solarium roof.

During the lifting operation, the building was stabilized by attaching guy wires to the slab corners and anchoring the guys to concrete deadmen.

• **New slab-column attachment**—A new method was used on this job to connect the lifting collars to the columns. After the slabs were raised to the right height, 1¾-in. dia pins were shoved through the column flanges and through 1¼-in.-thick shear blocks, which later were welded to the inside of the column's flanges. Finally, a rigid connection between columns and collars was made by driving steel wedges between the tops of the collars and the columns. The upper side of the pinned shear plates also were welded to the underside of the collars.

Advantages claimed for this pin method of fastening the collars include a considerable reduction in amount of welding and lifting time.

Lifting cost was estimated at 37 cents per sq ft, and the prestressing operation, including placing and jacking, plus mild steel and wire fabric reinforcing, at about 70 cents per sq ft. Column erection and lifting took 4½ weeks.

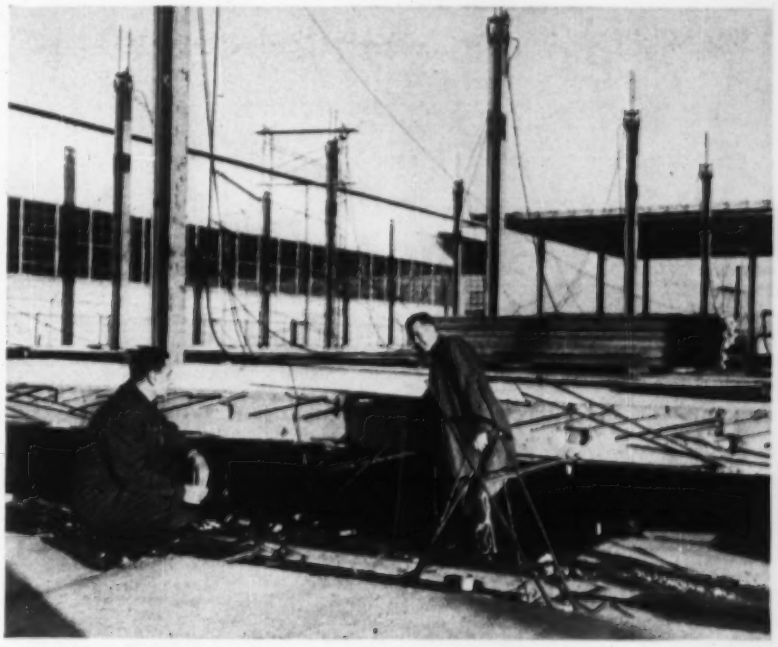
• **Building design**—The hospital addition will be enclosed with extensive window areas and light metal panels on the long sides. End walls will be masonry, 12 in. thick above the ground floor and 16 in. thick below. These walls are designed to take transverse wind loading on the structure.

Partitions will consist of 4-in. gypsum block, plastered on both sides.

Sherwood, Mills and Smith, Stamford, Conn., were the architects. Marchant and Minges, West Hartford, were the structural and mechanical engineers.

Prestressing was executed by A. F. Peaslee, Inc., Hartford, the general contractor. The Freyssinet Co., New York City, served as consultant on the prestressed concrete design.

. . . And a Weight-Lifting Record Set



A 1,400-TON SLAB rises 26 ft to roof an industrial plant in Lyndhurst, N. J.

Heaviest Lift-Slab Forms Roof

New England Lift Slab Corp. last week raised the heaviest lift-slab to date. Covering a 32,600 sq ft area, it weighed 1,466 tons.

Flanked by two 1,000-ton slabs, the record-breaking unit forms the center section of the roof of an industrial building being constructed for Standard Tool & Manufacturing Co. in Lyndhurst, N. J. It was cast on the ground floor and raised 26 ft by jacks atop 24 steel columns, which are spaced 40 ft c-c.

The jacks had to be operated close to the limit of their capacity (75 tons). In addition, the 24 hydraulic jacks used are the maximum that can be handled from a single console, or control unit, at present.

Weight of the reinforced concrete roof slabs was cut down by making them out of lightweight aggregate and using waffle construction. Corrugated fiberboard boxes, 34x34 in. by 13 in. deep, were used as forms. With a 3-in.-thick slab atop the boxes, the ribs formed are 16 in. deep and 6 in. wide. Concrete was specified to have a 28-day compressive strength of 3,000 psi.

• **Why design was chosen**—Selection of reinforced concrete for the roof of this plant building resulted principally because the owner wanted big bays and was not willing to wait for steel deliveries. However, steel columns could be easily obtained from warehouse stocks in time.

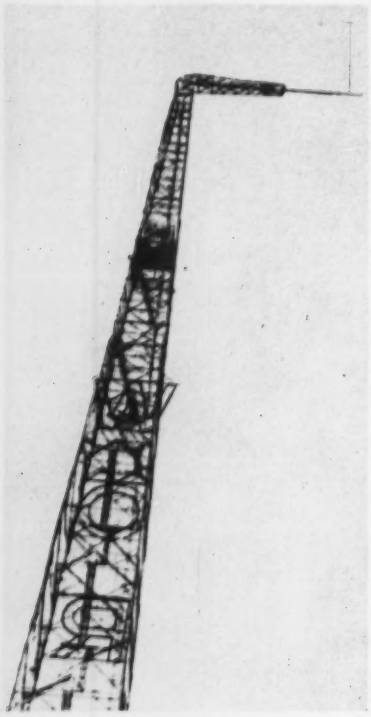
Cast-in-place concrete was ruled out because of the 26-ft height of the roof, which made falsework too expensive. Lift-slab construction proved to be the most economical method available for this job.

Size of the record-breaking slab was determined both by the capacity of the jacking equipment and of the control unit.

The columns were sized to permit the heavy slab to be lifted without any horizontal bracing and to assure lateral stability in the completed structure. The slabs were anchored to the columns by welding shear plates to the verticals and to cast-steel lifting collars that were embedded in the slabs. Weighing about 600 lb apiece, these collars not only serve as a shearhead but also provide a moment-resisting connection, for lateral stability.

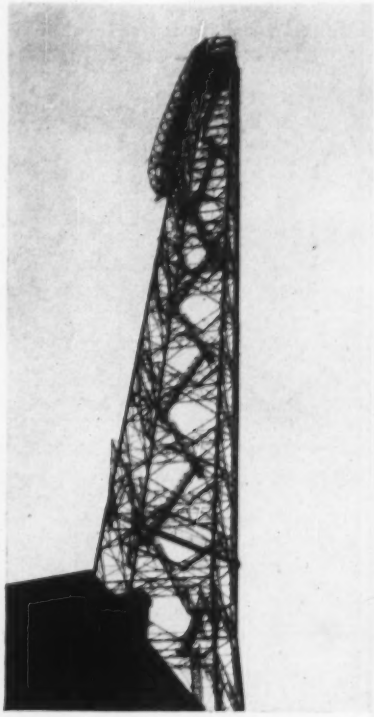
The ceiling of the plant, formed by the three lift-slabs, lies in a continuous plane 26 ft 5 in. above the floor. Lighting, sprinkler and other services are included in a 20-in. layer below the ceiling.

Powers & Kessler, New York City, were the architects. Garfinkel & Marenberg, also of New York City, were the structural engineers. Fred J. Botherton, Inc., is the general contractor on the project.



FIRST PULL folds damaged 105-ft top section and antenna . . .

RESULT is bend caused by impact and stage is now set for . . .



SECOND PULL and fold which makes tower safe for routine disassembly.

Riggers' Skill Folds Damaged Tower

On Thursday afternoon, Nov. 8, engineers in the center of densely populated North Bergen, N. J., were figuring the height of a television tower in terms of city blocks. For at 12:45 p.m. that day this unused 810-ft structure had been hit at the 705-ft level by a private plane, and four persons died.

The impact on the slender, four-legged steel tower tore out a 15-ft section of the southeast leg, as well as eight tension rods and two horizontal struts, and twisted two of the remaining legs more than a foot off line. Thus, there was real danger that the 120-ft, 6-ton section above the break would topple, probably destroying much of the remaining tower and many of the thickly clustered homes that surround the facility. More than 1,800 persons live within a four-block radius of the tower.

To the Gunnar A. Olsen Corp. of New York, fell the job of immediately securing the ruin. Olsen representatives, specialists in the erection, demolition and maintenance of antenna towers, were at the site within 45 minutes after the accident. Preliminary inspections indicated serious danger and city officials ordered an immediate evacuation of the area.

This is how it looked to Olsen: To reinforce the structure, men would have to work both under and on the dangerously-weakened upper section. To dismantle the structure by ordinary means would require placement of equipment above the break. Neither method was practical. There was nothing to do but fold the top over by pulling from the ground.

By 8:00 a.m. Friday all necessary equipment was at the site. In view of the precarious balance of the upper section, it was anybody's guess as to how much pull would be required to topple it. Taking no chances with the safety of his men, Olsen arranged to install a snatch block in such a way that, while two men were on the tower, the weight of all but 30 ft of the pulling cable would be carried on the lower, undamaged section of the tower.

This is how it was done. A 25-ton truck-mounted winch was placed to the west of the tower base. Two men went aloft with a single block and ¾-in. manila line. The block was lashed to the southeast leg just below the break. The line was fed through the block to the ground where it was attached to the ¾-in. cable at a point 30 ft from the dead end. The winch raised the cable to the block, and held it there while the 30-ft free end of the cable was shackled to the southeast leg just above the break. The men left the tower, and the winch operator slacked off on the rope holding the cable. The weight of the cable (600 lb) tilted the top an additional 5 to 7 deg, and a slight tug on the winch finished the job.

Tipping of the damaged section involved one danger that only those on the job knew about—the two-ton antenna at the top was held vertical by two snugly fitting collars placed 10 ft apart at the top of the main body of the tower. As a consequence, the antenna was held in position principally by its own weight. There was a possibility that during the overturning of the upper section, the antenna would skid out of the collars and become a flying spear 60 ft long. Fortunately, this did not happen.

What did happen was this: As the top section fell, it twisted so that its southeast leg knifed into the south face of the structure below, resulting in an interlocking of members. At the same time the entire part of the structure from the 570-ft level up was translated in a northeasterly direction with a maximum deflection of 12 ft near the 650-ft level. Nevertheless, since the antenna ended up almost directly over the lower southeast leg, equilibrium largely was re-

stored with the top section pushed into a damaged, but more or less stable lower section, the structure was relatively secure and work was suspended until Saturday morning.

The load cable had not been removed since it was to be used in folding the tower again—this time at the 570-ft level. In folding of the top section, the southwest and northwest legs had broken free at the bend. That left the inverted section supported only by the northeast leg, an angle now flattened into an 8 x ¾ in. plate. It was feared that this one remaining leg might tear under the pull needed to drop the next section, but luck helped the contractor. The impact of the falling top had sufficiently distorted the vertical members below to cause them to drop—though slowly—when pulled. At 9:30 a.m. the tower had been reduced to a height of 570 ft and all hanging components were being cabled to the rigid and virtually undamaged lower sections. Residents were permitted to return to their homes, and the contractor began the prosaic work of cutting up the folded section and telegraphing the small pieces of steel down a diagonal wire.

Niagara Power

FPC set to side-step state agency's application—next Congress the real hope

The question of who will develop U. S. power at Niagara Falls was up again in Washington last week. This time before the Federal Power Commission.

At stake is an application by the Power Authority of the State of New York for a license to build a $550-million power project, harnessing additional Niagara River water under terms of a 1950 U. S.-Canadian treaty.

FPC's Assistant General Counsel John C. Mason urged FPC in effect to wash its hands of the issue. He told the five-man commission it has no authority to license any firm or agency for the development because the Senate, in approving the treaty, reserved to Congress the right to determine the firm or agency that develops the power.

On the other hand, PASNY's attorneys, Philip C. Jessup and Samuel I. Rosenman, challenged the validity of the treaty reservation adopted by the Senate. They argued—with support from New York's Senator-elect Jacob K. Javits—that the reservation amounted to an unconstitutional attempt to usurp FPC authority.

FPC is expected to make its ruling at a fairly early date. No matter what it rules, however, the issue is certain to come up again in the Congress.

Dixon-Yates Epilog

Memphis plans 750,000-kw steam plant by February '59

The City of Memphis has revealed details of its steam plant construction program, the announcement of which in mid-1955 put an end to the Dixon-Yates imbroglio.

The plan is an ambitious one, calling for an immediate $154-million revenue bond issue to allow construction of a 750,000-kw plant by February 1959, and another $123 million for an additional 750,000 kw to be in service by 1965.

Just the first phase, comprising three 250,000-kw turbo-generator units, is thought to be the largest plant ever undertaken by a municipality as a single project.

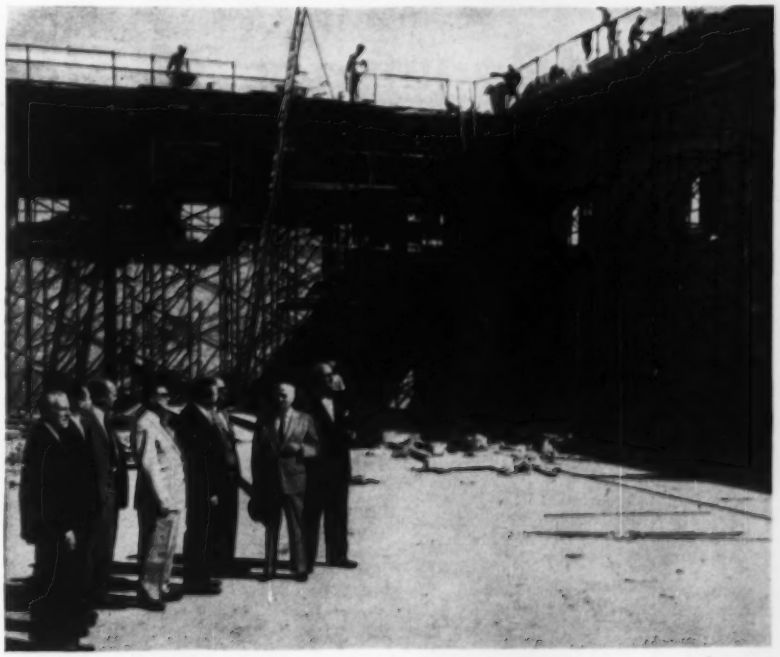
Memphis now buys its electric power from TVA for about 4 mills per kwh. Cost of generating its own power will be about 4.3 to 4.4 mills in 1962, which should compare favorably with TVA's rate at that time, according to Burns & Roe, Inc., consultants to the city.

An agreement already has been made with TVA to interconnect the Memphis generators with TVA's transmission network, thereby allowing the generators to be sized on an area basis to obtain advantage from lower cost per kw for larger units and from higher operating efficiency. Interconnection also provides advantages during emergencies and peak demands since TVA has a winter peak and Memphis' peak occurs during summer.

The first three turbo-generators, nameplated at 250,000 kw, are to have a total net capability of 812,500 kw and a best point net heat rate, when operating on coal, of 8,825 Btu per kwh when operating at the probable local load factor of 62%, heat rate is expected to be 9,500 Btu.

Turbines are being designed for 2,400 psi steam pressure at the turbine throttle and a temperature of 1,050 F. with the same reheat temperature. Each turbo-generator will be served by one cyclone furnace-type boiler to be fired by natural gas or coal. The former is to be used whenever the city's Gas Division has a surplus.

City of Memphis officials are making much of the point that revenue bond financing will make the program "an outstanding example of public power without public subsidy."



Bigger Hall for Biggest Road Show

The Chicago International Amphitheater—already said to be the largest exposition hall in the United States—is being enlarged now in an effort to house the Jan. 28-Feb. 2 Road Show of the American Road Builders Association. A new addition, 410x270 ft., has been put under construction and completion set in time for the show. With it, the amphitheater will provide as much display area as 12 football fields for the more than 250 manufacturers who will exhibit their wares at the show.

LONG-SPAN GIRDER and its columns are among the first steel members to be erected for a record-size bolted frame as . . .

Bolting Begins for 38-Story Building

NEW MODEL IMPACT WRENCH speeds tightening of high-tensile bolts. The tool develops 50% more torque but is lighter than the previous model.

The steel frame for the world's tallest bolted building is rising at a rapid rate as a new-model impact wrench makes quick work of the connections. The schedule calls for 13,000 tons of steel for the 38-story office building, at 666 Fifth Ave., in New York City, to be erected in 24 weeks.

Bolts for the connections range from ⅞ to 1¼ in. in diameter. Made of high-tensile-strength steel, they are being tensioned to about 55,000 psi.

The air-operated wrench being used on this project, developed by Chicago Pneumatic Tool Co., weighs 24¼ lb. It is reported to be 7 lb lighter and 2 in. shorter than any other 1¼-in. capacity impact wrench with a 1-in. square drive. It has up to 50% more torque output than the model it is replacing. In addition, improved clutch efficiency, it is claimed, reduces air needs up to 30%.

• **Novel design**—The $40-million skyscraper, which will be air conditioned, will occupy a 61,000-sq ft site extending between 52nd and 53rd St. and fronting on Fifth Ave. It will have a 14-story base, with floor areas ranging from 56,700 to 28,400 sq ft, and a 24-story tower with 18,000-sq ft floors. Net rentable area will be 1,050,000 sq ft.

The building will feature an "open" colonnaded street floor with a 30-ft wide arcade running back 100 ft from Fifth Ave. to the lobby and two other arcades leading from the side street to the lobby (ENR Feb. 24, 1955, p. 25). The 54-ft steel girder spanning the main entrance to the building was erected early this month (see photo). Weighing 26 tons, it is 56 in. high. Two pairs of derricks, operating in relay, erected it.

The exterior of the building will have an unusual facing of embossed, polished aluminum spandrels and 26-in. wide white mullions. Originally planned to be embossed with diamond shapes (ENR Feb. 16, p. 43), the anodized aluminum panels will now be fabricated with small squares.

Mullions, which will extend the full height of the building, will consist of a 20-in. band of white porcelain enamel set in a frame of 3-in. wide polished aluminum.

To permit office modules of 7, 9½, 12, 14½ ft, etc., plans call for windows about 7 ft wide, partitions being placed in line with the mullions. The windows will be vertically pivoted, to permit cleaning from inside.

Carson & Lundin, New York City, are the architects for the building. Victor Mayper is the consulting structural engineer. The steel is being erected by Bethlehem Steel Co. Tishman Realty & Construction Co. is the owner-builder.

New York Is Home

The national engineering societies will remain

New York City will remain the headquarters of the major national engineering societies.

United Engineering Trustees, Inc., has announced the signing of a contract with the architectural firm of Shreve, Lamb & Harmon Associates, New York, for preliminary plans and studies for a new engineering center in midtown Manhattan. UET is the joint corporate agency of the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. According to Walter J. Barrett, UET president and transmission maintenance engineer of the New Jersey Bell Telephone Co., of the American Institute of Chemical Engineers, also has been approved as a UET member and will participate in the enterprise.

The need for modern and enlarged quarters has been apparent for some time in the present 16-story Engineering Societies Building at 33 West 39th St. Over the last two years the engineering societies have considered offers from several other cities to move away from New York, but the final decision, based on a study by a firm of management consultants, McKinsey & Co., has been to remain in New York. The societies also have given approval to a location in midtown Manhattan.

Financing a new headquarters will require several million dollars. There will be contributions from the individual societies, and UET also has received the assurance of cooperation from a group of industrialists as well as educators.

It is understood that the preliminary studies of the architects are to include comparisons of cost and desirability of remodeling the present building, tearing it down and replacing with a new structure or building on an entirely different site.

Certification

Machinery for certifying sanitary engineers is now set up and starting to work

Certification of sanitary engineers has become a reality. Since July of this year, 200 applications for certification have been received and are being handled by the American Sanitary Engineering Intersociety Board. (ENR Feb. 16, p. 50).

Last week before the Engineering and Sanitation Section of the American Public Health Association's 85th annual meeting at Atlantic City, George O. Pierce of the World Health Organization and Mark D. Hollis of the U. S. Public Health Service submitted a detailed progress report of the ASEIB.

The board was organized in October 1955, to "improve the practice, elevate the standards and advance the cause of sanitary engineering." In the last year it has established criteria for certification, made arrangements for examination of applicants, and has already reviewed several applications for certification.

The first certificates are expected to be issued by July of next year. They will go to those who have had a minimum of 15 years of professional practice and "have achieved a high standing in sanitary engineering," and therefore are not required to take an examination. Other applicants will take written and oral tests in the coming months.

A specialty committee of the board evaluates the applicants and recommends to the board those qualified to receive Certificates of Special Knowledge in one or more of five fields of sanitary engineering—water supply and waste water disposal, public health engineering, industrial hygiene, radiation hygiene and hazard control, air pollution control.

The names of the engineers who achieve certification will be carried on a roster to be known as the American Academy of Sanitary Engineering.

• **How to certify**—Briefly, the requirements for certification are as follows:

- Be registered as a professional engineer.
- Be a graduate of an accredited engineering college.
- Have eight years of sanitary engineering experience.
- Be of good moral character and of high ethical and professional standing.
- Have four years of responsible charge of work in sanitary engineering.
- Take an oral and written examination.

For those with 15 years experience and unusually high qualifications, application must be made by July 1, 1957, to certify without examination.

Detailed information concerning the certification procedure is contained in a bulletin of the ASEIB. Write to: Office of the Secretary, 33 W. 39 St., New York 18, N. Y.

Building Officials Plan Housing and Sign Codes

Tentative drafts of a Uniform Housing Code and Uniform Sign Code were submitted at the 34th annual meeting of the International Conference of Building Officials (formerly Pacific Coast Building Officials Conference) in Palm Springs. The drafts are now in the hands of committees, with final action scheduled for the 1957 annual business meeting.

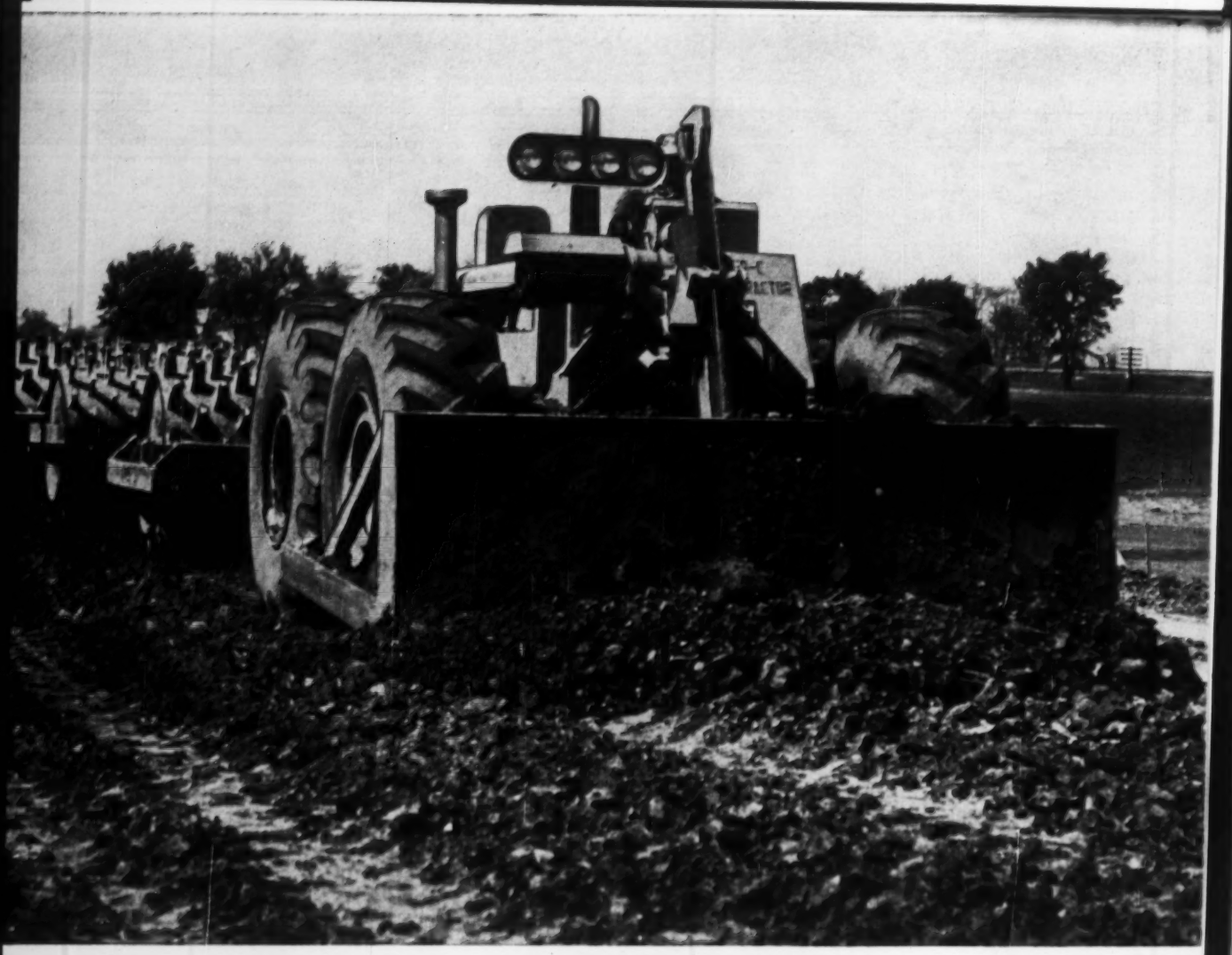
C. S. McCormick, building superintendent, Tacoma, Wash., was re-elected president; Marcus S. Carlson, building official, Alameda County, Calif., first vice president; and Cassatt D. Griffin, superintendent of building, Los Angeles County, second vice president and treasurer.

Wisconsin's Road Program Will Set a State Record

The Wisconsin State Highway Commission, working with federal and local governments, said last week that it will finance the largest roadbuilding program in the state's history in 1957.

Cost of the work will be $111.9 million, topping 1956 by some $5 million.

A breakdown shows that $57.3 million will go for work on the state's trunk highway system and federal-aid projects in local communities; $44.6 million for work on the state's nearly 500 miles of road on the federal interstate system, and $10 million for secondary roads.



How to get more out of your tractors

STUDY POWER ... Power is of prime importance, but, today, you need to consider engine horsepower as a *source*, not a "force". Maximum horsepower ratings considered alone are without meaning. Ratings must be studied across the speed range to measure their effectiveness in push-pull effort at desired operating speeds. Also, you need to check the smoothness with which power is applied; the time-factor in making a deep cut, and the difficulties in shifting which may discourage an operator from using the proper gear ratios to apply power with greatest time efficiency. Check, too, the percentage of time where you use the combination of power and traction for maximum push-pull. You will find power at maximum "drawbar" is seldom used for tractive effort. Since *all* tractors are able to spin their tracks or wheels in low gear on normal footing, horsepower should be considered only as a power source ... available for use in *any direction*. The most effective power combination lets you work at highest practical speeds which job conditions permit. (See table at right.)

STUDY TRACTION ... Pounds-pull is a combination of power *and traction*. Compare it ... but at *your* desired operating speeds. Usable pounds-pull results from many factors: type of material, conditions underfoot, weight of tractor, and forward speed. From the table at right, you can see that Tournatractor pounds-pull compares favorably with track-type tractors from 2.0 mph up. Even if Tournatractor takes a thinner initial cut, its time advantages in stepping up speeds, gives you a faster overall cycle. Wide-base rubber tires now available on Tournatractor can give still more traction on rubber. Its anti-friction drive and minimum of moving parts give you far less loss in power transmitted to ground-contact. It eliminates loss of power due to accumulation of mud and dust in tracks. Its compaction characteristics give a major advantage on fills and haul roads. Its low-pressure air-cushion and flexing rubber-treads can provide even better traction than crawlers in many materials. They permit work and travel without planking over pavement, curbs, and rocky footing.

STUDY SPEED ... Speed today is a major dimension in every piece of equipment you use. For years crawler engineers have struggled with this problem. They have made improvements, but find it difficult to overcome the friction-losses and wear-costs involved in stepping-up crawler speeds. With 4-wheel-drive, instant-shift, constant-mesh transmission, torque converter, instant controls, and anti-friction-drive, Tournatractor has a combination of speed factors not equalled by any crawler. With twice top-speed of heavy-duty crawlers, today's Tournatractor has many other savings in each cycle that contribute to its *speed* performance. You've seen the load build up on a crawler's blade, but have you checked the other components of the crawler's day? Carrying-the-load, spread, return, wait-and-travel time, are all part of your cost and call for long-term time-study. Figure, too, the few times where crawler maximum-drawbar at low speed gives you a production advantage; then compare with the much larger time percentage where extra speed can pay off in profit.

STUDY MOBILITY ... Crawler-moves, job-to-job, or from section to section, require moving in of truck and flatbed, loading and unloading time, plus actual travel-time. These high moving costs make crawlers expensive on hit-and-run assignments. Yet today's large-area contracts need far more equipment movement than ever before. Tournatractor can be at work a mile away in less than 5 minutes ... lets your pushers be as flexible as your prime-mover scrapers when moving to a new area ... for instance, to work drier borrow during wet weather. Mobility also gives you flexibility to quickly balance pushers as well as scrapers when hauls vary. It lets you use idle time to improve haul roads, detours, or drainage. It makes quickly available ripper, stumper, or compaction service anywhere on your project. Mobility is an important dimension in today's dirtmoving ... will be more important in your larger future. Think it over, remember some of your last year's projects and count the times when a 17.4 mph tractor could have saved you money and given you bigger profits.

Write for complete Tournatractor specifications.

Rubber-tired Tournatractor travels and works over any type of footing to clear land, push-load scrapers, dig ditches, spread fill, stock-pile materials, maintain haul roads, backfill around culverts, pull rippers, rollers and other equipment. The best way to judge today's improved Tournatractor is to see it in action on one of your own jobs. Call or write us today for a demonstration of this machine. Compare its profit possibilities with your present heavy-duty tractor equipment.

Time study production relationship of pull to speed

TRACTOR	HP with torque converter	Speeds in MPH		Pounds of pulling effort			
		Forward	Reverse	1.5 mph	2.0 mph	2.5 mph	3.0 mph
CAT D8	191	0 to 3.6 low 0 to 7.4 high	0 to 3.6 low 0 to 7.4 high	30,000	24,000	18,000	15,000
IH TD24	200	0 to 7.6	0 to 6.6	32,500	22,500	18,000	15,000
TOURNATRACTOR	208	0 to 17.4	0 to 7.3	24,700	23,500	18,800	15,650
AC HD21	204	0 to 3.0 low 0 to 7.5 high	0 to 5.5	Pounds-pull curve not shown in manufacturer's literature available to us.			

Note: Figures taken from manufacturers' specification sheets available to us at time of printing. Tournatractor—Trademark Reg. U.S. Pat. Off. CT-1150-G

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

work at highest practical speeds which job conditions permit. (See table at right.)

ment, curbs, and rocky footing.

Building a Drydock to Hatch an Aircraft

First Stage: Sheetpile cells (here being partly filled with dredged material) will form permanent sidewalls of 1,100 x 150-ft drydock in which supercarrier will be built. New Philadelphia-Camden Bridge is a neighbor.

Next: Carrying forest of 2-in. grout pipes, rafts cover about a third of length of dock, as underwater grouting of 140,000-cu-yd floor slab proceeds. Placing of slab took about six weeks of continuous operation.

Carrier

When you consider the problems involved in designing and building New York Shipbuilding Co.'s supercarrier-size new drydock at Camden, N. J., you must first consider the central problems of the construction speed required and the strict money limits imposed.

For from those problems flowed designs that have resulted in the longest continuous concreting (in this case grouting) operation on record—6 weeks—during which 60,000 cu yd of grout was injected into preplaced aggregate to produce 140,000 cu yd of finished concrete.

The longest, largest, continuous placement of conventional concrete—where aggregates as well as mortar go through the mixers—was on the east anchorage of the Delaware Memorial Bridge at Wilmington, Del., where 27,000 cu yd were placed in 7.4 days, or 3,600 cu yd per day. Actually the average daily "production" of concrete on the drydock was close to this—3,300 cu yd—but the "placement" of concrete was considerably smaller—about 1,400 cu yd per day.)

The problems of construction speed and money also sparked a stripped-down, streamlined general design that permitted the contractor to work right up to or even ahead of the availability of the detailed design.

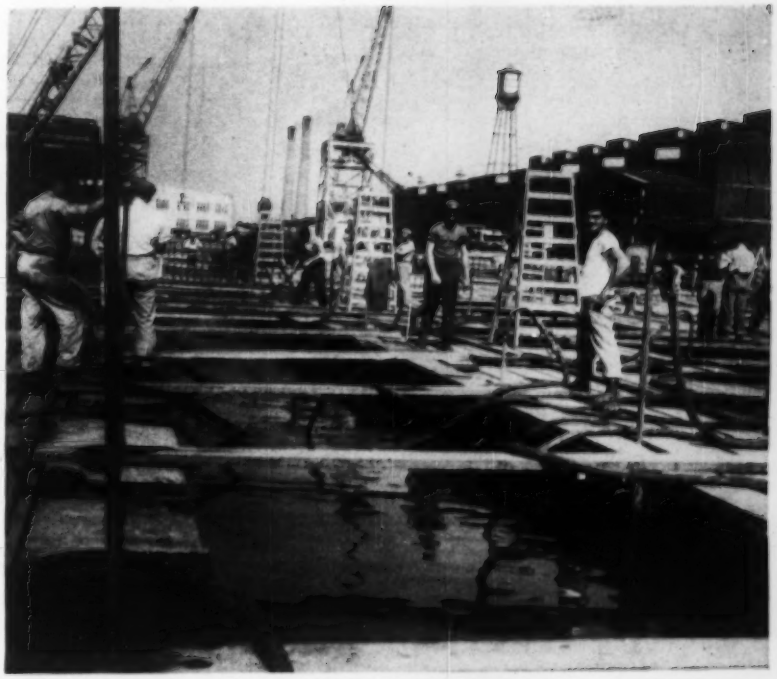
The background of this situation is simply stated: Late in October, 1955, New York Ship signed a $120-million contract with the U.S. Navy, for construction of one of the immense "Forrestal" class aircraft carriers. A provision in the contract called for laying the keel of the big ship by the end of December, 1956 (sub-assemblies for the carrier, meanwhile, would begin to be made up immediately).

The difficulty was that New York Ship didn't have a graving dock big enough for the job.

The shipbuilding company did, however, have the space in which to build such a dock—a waste area on the south end of its three-mile long riverfront along the Delaware just opposite Philadelphia, and adjacent to the new Walt Whitman bridge.

The shipbuilder wasted no time. It alerted its parent company—Merritt, Chapman & Scott of New York (which would act as general contractor and supervisor), called in Parsons, Brinckerhoff, Hall & MacDonald as consulting engineers—and at the same time set American Dredging Company to work removing muck, silt and an accumulation of trash on the site.

What it wanted, said New York Ship, was this:



Grout pipes, shown here being serviced from small rafts and planking, are connected by hoses to pumping station. Pipes extend into 24-ft-thick traprock blanket, are drawn upward as grout rises.

A graving dock 1,100 ft long, 150 ft wide, with a maximum depth (below the river's mean high water line at El 107.5) of 43 ft, with sufficient facilities—but no frills—for the construction of a supercarrier. Such a dock is comparable to the largest now in use by the U.S. Navy.

And, added the owner, it wanted this dock to cost not more than about $10 million, and in shape for keel-laying within 12 months.

• **Enclosure**—First move for the engineers was a thorough examination of the site and what lay under it—and design of a cellular diaphragm-type sheetpile cofferdam to enclose the area.

The diaphragm cells on the two long sides and at the head end will remain in place to form permanent sidewalls of the completed dock. Circular cells at the river end will be removed after placement of reinforced concrete floor and end walls, which will contain the caisson (gate) seat and pumping equipment. The cells on the sides and the head end (except at the corners) are roughly of rectangular shape, with rounded ends—thus giving a scalloped effect to the inside wall of the dock—and are 54 ft 6 in. in height and 35 ft 8-in. wide. The cells were to be filled hydraulically with select sandy material.

The 15-in.-wide sheets were to be ¾ in. thick, driven to El 55, and cut off at El 107.5 (mhw). Special care was to be exercised in filling the cells, to assure a differential of not more than 5 ft between adjoining cells.

• **But how about the floor?**—At first glance, a relieved-type floor-slab—underlain by a sand and gravel blanket draining to pumps to control uplift pressures—seemed to be indicated.

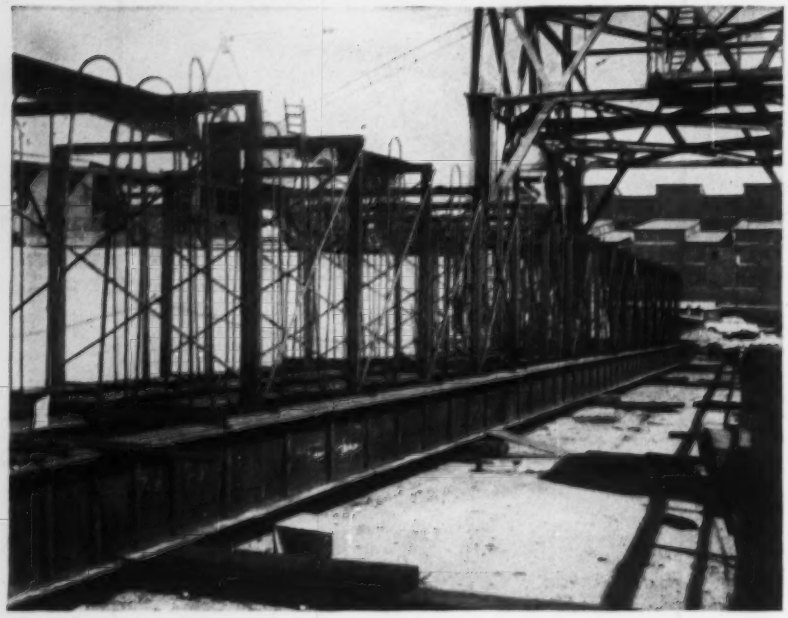
But the soil investigations showed immediate trouble—a water table so high and water in such quantities that the cost of continuous pumping over an extended period would far outweigh the savings on the relieved-type floor slab. Shipbuilders figured a couple of years for construction of the carrier—and engineers felt that pumping would have to be uninterrupted for that full period to prevent damage to the dock by the heavy uplift pressure.

Worse, such heavy and continuous pumping would have required immediate re-charging of the surrounding area, lest foundations be weakened in surrounding commercial establishments, and lest the drawdown be so great that many industrial plants would be unable to use present groundwater supplies.

• **Gravity will do it**—The answer had to be a gravity slab, held in place by a combination of its own weight, friction on the steel sidewalls of the dock itself, plus some allowance for reduced hydrostatic head due to impedance of groundwater moving through surrounding strata.

Final design, then, was for an unreinforced concrete slab, roughly trap-

. . . Drydock—Driving the cell sheet



Reinforcing cages, like this one (102 ft long), will be placed under water at the river end of dock to support sidewalls and gate.

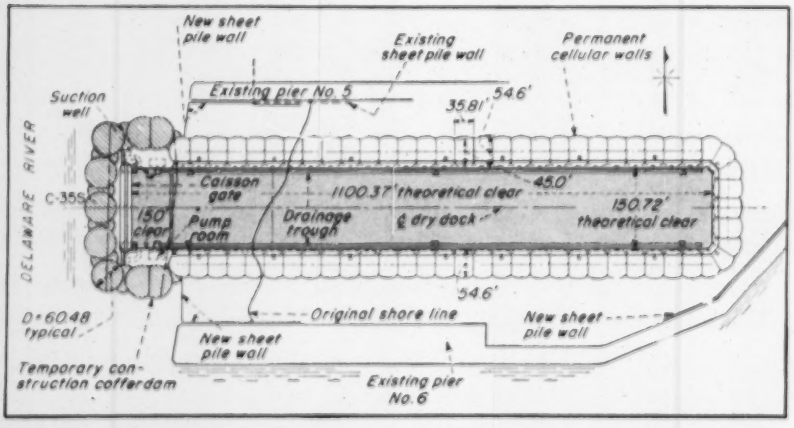
ezoidal in section, varying from 23 to 25 ft thick at the centerline, and from 16 to 18 ft in thickness at the sides.

The slab had to be placed under water its full 1,100 ft length—something over 140,000 cu yd of finished concrete. The Prepakt Concrete Co. of Cleveland, a division of Intrusion-Prepakt, Inc., which had recently completed a similar job with the same contractor on foundations for the Mackinac Bridge (a 91,000 cu yd block of concrete being the largest —ENR Jan. 27, 1955 p 35) was engaged to work out details of the unprecedented operation that was planned.

In detail, the final program was this: Aggregate would be traprock, brought in by barge from about 20 miles upriver, size of the rock varying from a maximum of 6 in. down to 2% passing a ½-in. screen. The rock was to be placed to the full depth of the proposed gravity slab, screeded level by drags, and then grout pipes placed in rows, 10 ft on centers in previously driven casings penetrating the rock.

To insure continuous grouting over an estimated six weeks of operations, the initial pipe installation would cover about a third of the total length of the dock, rows of pipes then being leap-frogged over others as the active front of the grout moved riverward.

At the river end of the dock, in the 80 x 150 ft area that will be the site of the gate, sill, and pump houses, reinforcing cages would have to be placed in the rock fill.



Location, dimension, construction of new drydock are clear in drawing. Area between Pier No. 5 and new dock is to be filled in to make added working space.

• **Work starts**—With these matters settled in general—but with design details still on the engineers' drafting boards, MC&S moved a 400-man crew and heavy equipment onto the scene.

Under the previous contract, American Dredging had removed 730,000 cu yd of material, to form a deep, U-shaped area. Now MC&S brought in a cutter dredge to take the underwater excavation down to firm bottom—a process involving removal of another 140,000 cu yd of material.

Ready for driving of the 8,400 sheets that make up the cells, MC&S superintendent Donald McGregor found immediate trouble in the form of areas of cemented river sand of the consistency of rather lean concrete—so hard that tests showed it took about 1,800 blows on a standard 2-in. spoon to penetrate 1 ft. As a result, all but a few of the sheets had to be jetted into place.

Working only a very small jump behind the engineers, the contractor began a series of concurrent operations: Bringing in traprock by barge from a point about 20 miles upriver; fabricating comparatively large cages of reinforcing steel that must be placed under water and in the rock fill in the river end of the dock to reinforce the floor slab at this point against uplift—in a section where part of the weight is achieved by the added weight of the sidewalls; and arranging for plant setup and operation of the carefully-controlled underwater grouting.

Just before placing the rock, MC&S found an added problem: One cell at the river end had been omitted, to permit water access to the dock for the rock barges, tugs, and floating equipment. Heavy deposits of silt also came in from the river through the gap—to depths of up to 8 in. and had to be removed. To stop this flow, a line of sheetpiles was driven and cut off at an elevation of 20 ft above the dredged ground level, in order to permit continued access of waterborne equipment.

The reinforcing cages—made up of 18-in. steel I-beams spaced 2 ft on centers and reinforcing bars—are to be placed transversely in the river end of the dock, in a section 100 ft long and 210 ft wide. To insure accurate placing, a series of steel stub piles are placed in the rock blanket, down to—but not driven into—the dredged bottom. The tops of these piles will be levelled exactly, and the cages lowered and placed by divers. The cages will be placed in three sections—those at each side being 40 ft long, those in the center 102 ft long, ends of the sections overlapping to provide continuity under the side walls, floor and gate structure.

• **Concrete mixing**—Meanwhile, working with the contractor and the engi-

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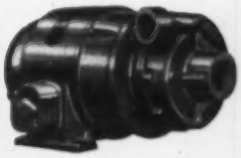
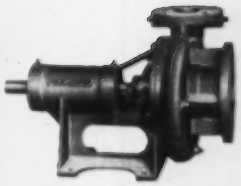


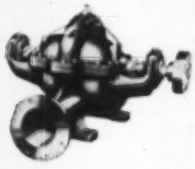
TYPE PE FLUIDYNE INTEGRAL HP PUMPS

A complete line of electric close-coupled general purpose pumps. Threaded or flanged connections. Capacities: to 800 gpm; heads: up to 260 feet; motors: up to 50 h.p.



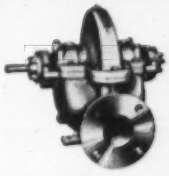
TYPE PB FLUIDYNE GENERAL PURPOSE PUMPS

Flexible coupled, single-stage, end suction, general purpose pumps. Rugged and durable. Capacities: up to 5500 gpm; heads: up to 260 feet; motor: up to 150 h.p.



TYPE A GENERAL PURPOSE PUMPS

For application to the widest variety of pumping conditions. Single stage split case design. Capacities: up to 70,000 gpm; heads: to 300 feet. All types of drive.



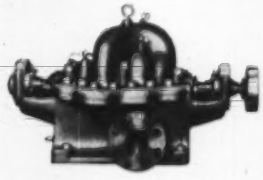
TYPE AS GENERAL PURPOSE PUMP

The centrifugal pump with mechanical shaft seals that eliminate the packing box. Up to 4" in discharge sizes. Capacities: up to 750 gpm; heads: up to 210 feet.

BY BUYING FROM THE COMPLETE LINE

VERTICAL DEEP WELL TURBINE PUMPS

For application to deep well pumping. Lifts from 1000 feet or more. Capacities: up to 30,000 gpm. H.P. range: up to 1000 h.p. oil and water lubricated types. Widest range of sizes.



TYPE TU BOILER FEED AND PROCESS PUMP

2-stage high pressure pump for water and other liquids. Capacity: 50 to 3500 gpm; heads: up to 600 feet. Internal cross over is built into top half of pump case.

TYPE TUT MULTI-STAGE PUMPS

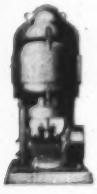
3, 4 and 5-stage pumps for water handling and process services. 1" to 5" discharge sizes. Capacity: up to 1350 gpm; head range: up to 1600 feet. Split case design.

INDUSTRIAL SERVICE PUMPS

For application to pits, sumps, basins, reservoirs and other surface water sources. Same capacity as deep well turbine above. H.P. range: up to 2500 h.p.

HYDRO-LINE PUMPS

An enclosed, close-coupled, vertical centrifugal process pump for handling petroleum hydrocarbons, where NPSH is limited. Capacities: to 6000 gpm; heads: to 1500 feet.



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The unique positive displacement deep well pump that literally squeezes water upward. Capacity: 10 to 55 gpm; lifts: up to 1000 feet. For wells 4" in diam. and up.

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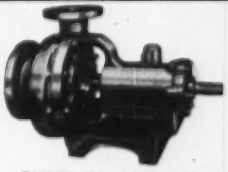

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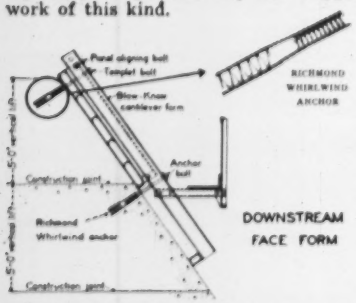
Massive Pours

Merritt-Chapman & Scott and The Savin Construction Corp., contractors, used 55,800 Richmond Whirlwind Anchors without slip or spall in this vast dam construction at American River, Folsom, California.

Economies with Richmond Whirlwind Anchor

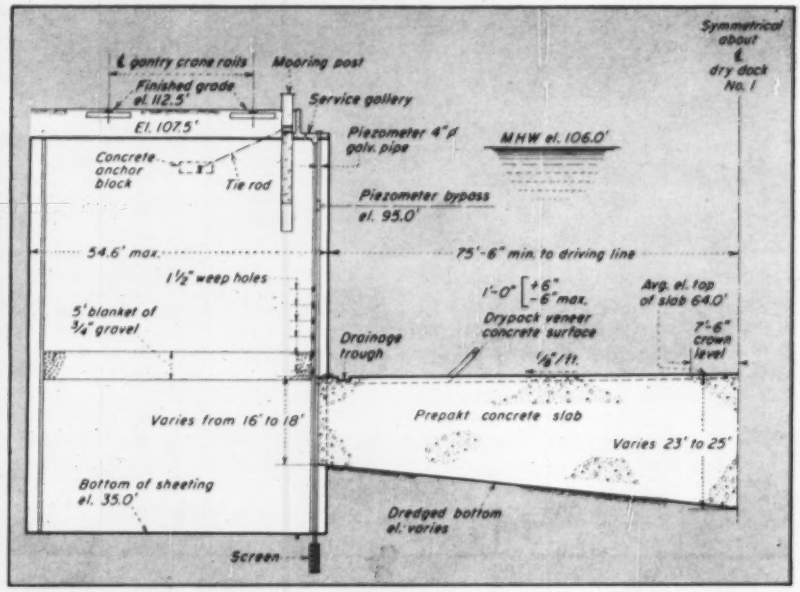
In dam construction like the above, considerable speed and economy are to be gained by pouring successive monoliths in 5 ft. lifts into steel cantilevered forms. Success of this money-saving method depends, however, on one-point form anchorage that will positively withstand massive overhead pours and loads imposed from all directions. Richmond's *Whirlwind* anchor was designed especially to prevent slip for rugged work of this kind.



These Richmond anchors are mounted on the form before each monolith is started. Installation is easy. The *Whirlwind* is made with double coils, one coil takes the form bolt, the other supplies added anchorage to prevent slip in concrete during its low early strength period. There is no spalling. Richmond's development of these special anchors has been in large part responsible for the constantly increasing popularity of this fast, more economical, anchorage and pouring method.

For more information, or a copy of the Richmond Handbook of tying devices, anchorages and accessories for concrete construction, write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 S. 4th St., St. Joseph, Mo.

. . . Drydock—Placing the concrete



Section through sidewall of dock indicates use of sand-filled cells for walls, tie-in of gravity floor and mooring posts to firm anchorage.

neers, engineers and consultants for the Prepakt organization had been preparing specification for the mix and plans for the grouting operation.

A batching plant was erected on the south side of the new dock, so that it could be served by barges bringing in sand, and by railroad tracks where cement and fly-ash could be delivered. A floating crane feeds the batcher, which is now operating at the rate of about 85 cu yd of grout per hour. This rate results roughly in 5,000 cu yd of slab per 24 hours of operation.

The mix design, prepared by Prof. R. E. Davis of the University of California, calls for: Three parts cement, two parts fly ash, eight parts of blended sand, an intrusion aid, and water. The cement content has been purposely kept on the low side, to hold down the heat of hydration. Design strength is 2,500 psi at 28 days, although samples that have been taken indicate strength exceeding 4,000 psi.

The plant is designed to batch automatically into a dual-weighing hopper; the intrusion aid is introduced directly into the two mixers that are required to maintain a uniform mortar production rate (a third mixer is provided for standby capacity).

The mixers discharge into agitators, from which pumps take the mortar through several hundred feet of lines that connect to a secondary pumping station, placed on skids at the dockside. At this station, the mortar again goes into agitators, for continued mixing until it is drawn off by the pumps.

• **Placing**—The mortar placing is done through lines of 2-in. pipes placed in casings driven through the traprock on 10 ft centers and connected to the secondary pumping station by rubber pressure hoses. The casings are removed as soon as the pipe is inserted, and the pipes are raised as the mortar rises in the rock, being entirely removed at the end of the operation.

Placement began at the head end of the dock, with pipes so placed as to cover roughly one-third of its length. This amount of piping is sufficient to insure there will be no interruption to the advancing face of the mortar, as the pipes are shifted, leapfrog fashion, toward the river end of the dock.

In order to support the grout pipes, provide a working platform, and support a series of sounding wells, used to measure the depth and progress of the grout face within the rock, the contractor built several dozen small rafts (of old oil drums and planking) which give the site the appearance of an oversize and very crowded swimming pool. The little rafts (roughly 8 ft square) are lifted by crane as the operation moves forward.

The face of the mortar as it advances through the aggregate is essentially a plane surface, sloped at the angle of repose of the mortar under water—about 1 on 5. It was essential that pumping be started on the center line of the drydock, and work out both ways to the sides, so as to build up this sloped plane surface before the advance down the length of the dock started.

Once a uniformly sloping mortar face

Convert gravel pit to Drive-In theater site

Matched speed and traction of big rubber tires on pusher and scraper unit speeded up cycles. Single Tournatractor replaced 2 crawlers on this push-work.

Dallas movie-goers now watch current films at a new drive-in theater which was, until recently, a worked-out and abandoned gravel pit. Theater programs could read: "Earthmoving by George O. Walker Construction Co., Dallas, Texas".

Filling and leveling a gravel pit is a unique way to build a theater — but Texans like to do the unusual. So Walker moved in...loaded, hauled, and spread 120,000 yds. of sand and caliche to turn the irregular hole-in-the-ground into an attractive theater setting.

To move this yardage, Walker used a LeTourneau-Westinghouse team of 5 D Tournapulls and 1 208 hp rubber-tired C Tournatractor.

Filled from old spoil banks

Fill for the pit was obtained by cutting down most of the banks, together with old spoil piles on the property, to form a symmetrical amphitheater. First a dozer leveled off the steepest spoil ridges on the borrow section...then Tournapulls moved in for the king-size dirt-moving task.

Averaging 5-yd. loads per trip, the "D's" loaded on banks...hauled down into pit for spread. Returning, Tournapull operators handled their own haul-road maintenance, by dropping scraper's blade to smooth out haul route.

2,400-ft. cycle in 3 min. 22 sec.

On a cycle distance of 2400', "D's" averaged 3 min. 22 sec. Rigs loaded in 20 sec., over a 60' distance. Loaded Tournapulls completed 1120' haul in 1 min. 36 sec., returned in 1 min. 16 sec. Spreads over a 100' distance, took 10 sec.

Dirtmoving was done during the winter months, when rains and cold weather made work difficult. Yet Tournapull production remained steady under all weather conditions. When an unusual 4" snowfall hit Dallas, for example, it interrupted work for only half a day. When the storm was over, rigs had no trouble operating in snow.

Out-perform comparable scrapers

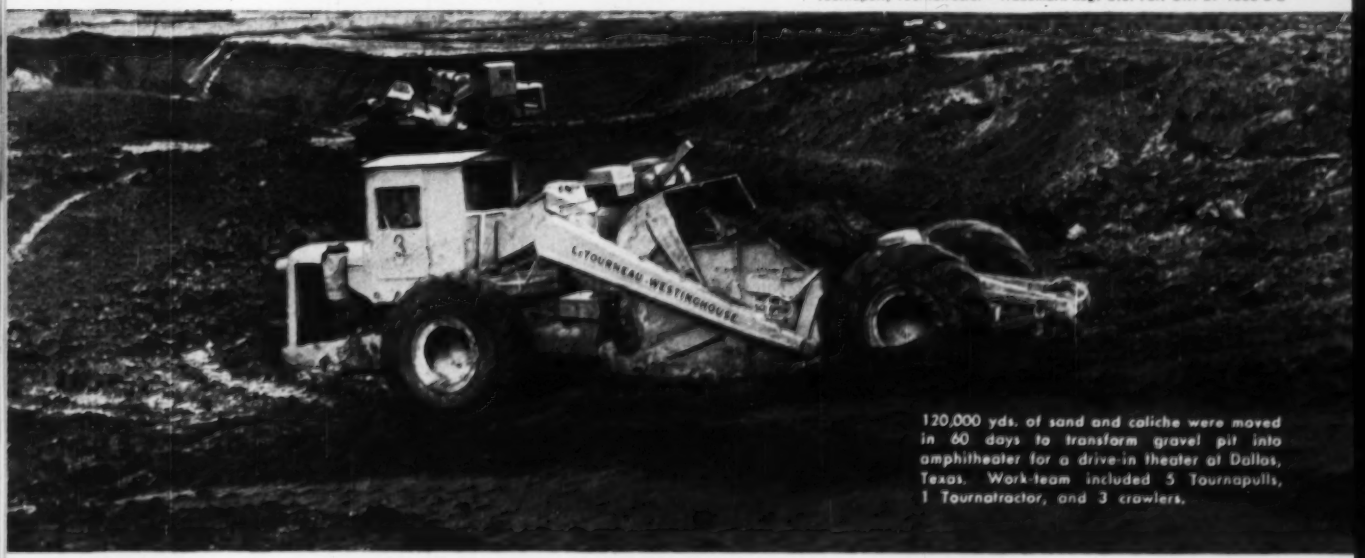
Superintendent J. K. Mason had this to say about his D Tournapulls: "In my opinion, Tournapulls will outperform any similar equipment on the market today. They will out-turn them, out-run them, and load faster! Anything you can get into a 'D' you can get out fast — and that's more than you can say for many other scrapers."

Owner George Walker found that his one Tournatractor handles the pushing job which formerly required 2 crawler-pushers. "This rubber-tired tractor is much less expensive to operate than crawlers," he stated. "Maintenance and upkeep costs, both for D Tournapulls and Tournatractor, are low."

Now 9 yards heaped

The improved D 'Pull, now available, has 7.3 cu. yds. struck capacity and 9 cu. yds. heaped. With its narrow 8' width, and axle-loads within allowable weight limits, rig is roadable without special permit. Write for details. Find out how this machine can make profits for you.

Tournapull, Tournatractor—Trademark Reg. U.S. Pat. Off. DP-1038-8-b



120,000 yds. of sand and caliche were moved in 60 days to transform gravel pit into amphitheater for a drive-in theater at Dallas, Texas. Work-team included 5 Tournapulls, 1 Tournatractor, and 3 crawlers.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

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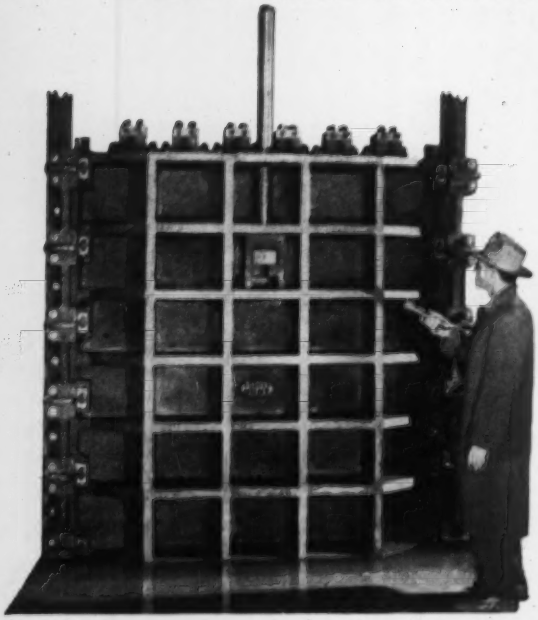

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Specify Rodney Hunt Sluice Gates for standard sizes of 6 x 6 to 120 x 120 inches clear opening, rectangular or round. Over 2000 combinations of standard Rodney Hunt Sluice Gates, including many of unusual dimensions, are available with precision-built hoists.

Write us for the name and address of the Rodney Hunt representative in your area. He'll be glad to give you quotation information and engineering assistance.

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was established, the procedure has been to place the mortar up the slope to build succeeding layers. Thus, if the pipe rows were numbered, from the head end, 1, 2, 3, 4, 5, 6, and so on, first pumping would be at row 3, then 2 then 1, (to establish the sloped surface) then 4, 3, 2, 1, then 5, 4, 3, 2 in that order for the full 1,100 ft.

Since the mortar will set up into firm concrete in roughly 18 hours, the matter of moving forward with pipe connections must be carefully controlled, so that the face of the mortar is always active, and no joints or seams develop.

Conventional concreting methods will be used for the sidewalls and housing for the gate and pumping facilities at the river end.

• **Dewatering**–Since the dock will remain dewatered for a period of several years, during construction of the carrier, initial pumping installations will later be supplemented by additional capacit . In permanent operation, the dock should be dewatered in about 8 hours. But initial dewatering will be carefully controlled and will take about 8 days. Piezometers will be placed in test wells to measure the effect of the expected hydrostatic pressure. If any measurements show a pressure corresponding to a water level of El 95, dewatering will be stopped and deep wells installed around the perimeter to relieve the pressure.

Once initially dewatered, the top of the slab will be sandblasted, and a layer of leveling concrete placed on it since variations of plus or minus 6 in. are expected as result of the underwater operation.

The working gallery for shipbuilders will be simply an open platform atop the sheetpile cells, backed by a concrete wall, which will be topped with a railing composed of six pipelines carrying various services to the dock. The edge of this platform will project over the scallops of the underlying cells to give a straight edge to the top of the dock.

Heavy shipyard cranes will operate on tracks to be laid atop the compacted material in the cells that form the sides of the dock.

The caisson-type steel gate will be assembled in place over the sill. Basically, the gate is a hollow vessel, 49½ ft high, 159 ft wide, 20 ft thick, equipped with its own pumping system for dewatering to restore buoyancy when the dock is to be opened.

John W. Keig is plant engineer for New York Shipbuilding Corp.; John C. King chief engineer for Prepakt, with Alex Hawkins as project superintendent. George Vaccaro is project engineer for Parsons, Brinckerhoff, Hall & MacDonald and John O. Bickel is partner in charge for the same firm.

Clyde equipped barge handles 800 T.P.H. for Ohio's Raymond City Coal

Free digging of 700 to 800 tons per hour . . . that's the average coal handling performance of Raymond City Coal and Transportation Corp.'s Clyde equipped barge derrick.

Coal from West Virginia is shipped by barge to their modern and efficient plant at North Bend, Ohio. Here, it is loaded directly into a barge mounted hopper, then by conveyor belt to stock piles, railroad cars or to storage bins for truck loading.

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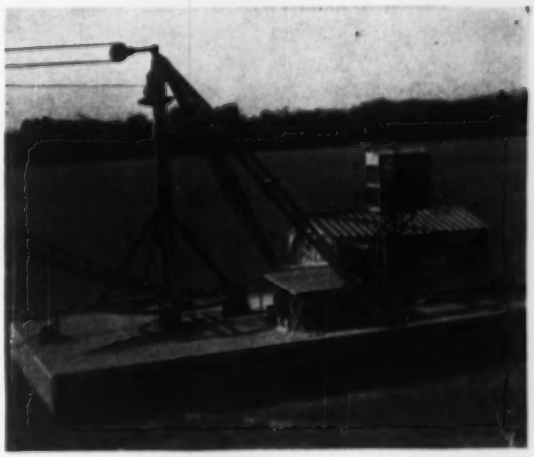
Clyde builds a "working team" for every kind of material handling operation.

Raymond City Coal and Transportation Corp.'s coal handling barge is equipped with a heavy duty, Clyde steel derrick operated by powerful 25,000 lb. line pull hoist and independent swinger.

Two Clyde barge movers position the coal barges during unloading operations. Two Clyde capstans, one at each end of the barge, are used for mooring lines. Greater capacity, lower handling costs and an operation ". . . free from trouble since its installation . . ." expresses Raymond City's approval of this fast working, Clyde unit.

Your material handling methods can also be improved by using Clyde equipment. *Why not get all the facts on Clyde.*



Air operated Clyde hoist has control lever bank elevated to permit unobstructed vision for operator, Anti-friction bearings on drums and shafts of hoisting equipment and on derrick sheaves, assure efficient and dependable service with less maintenance.

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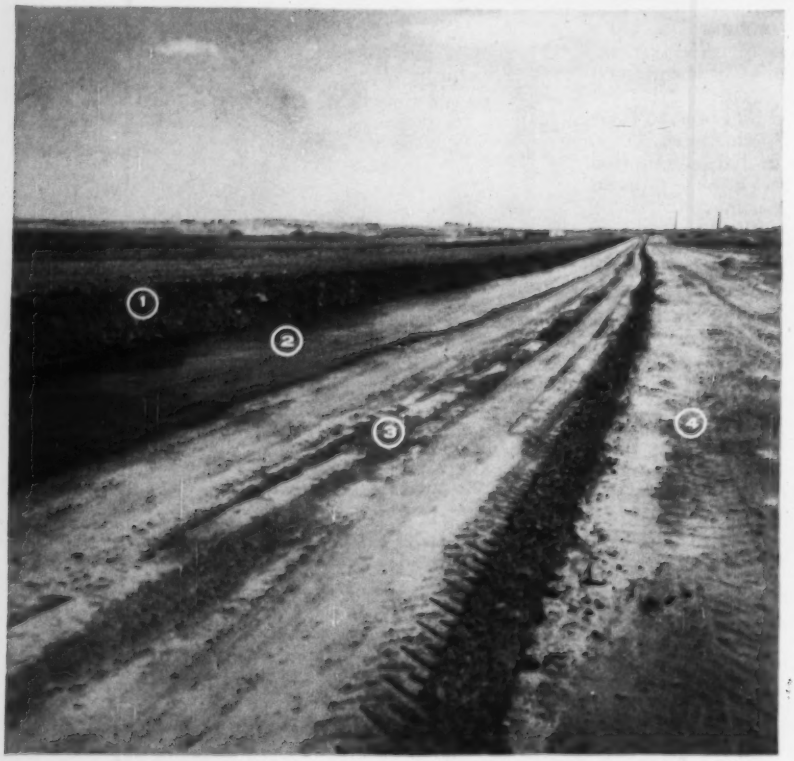
Asphaltic

Wide strips of asphalt membrane make 100-acre lake bottom waterproof for Army's Chemical Corps. Contractor uses unique methods to solve construction problem of placing the impervious floor . . .



Method used: (1) A 1-ft blanket of earth lies atop asphalt base as (2) a new strip of membrane is sprayed on at the same time graders level the next adjoining strip (3) preparing it for the asphalt cover. (4) The next area before any grading.

The Corps of Engineers has put a leakproof bottom of asphalt membrane in a 100-acre lake at the Rocky Mountain Arsenal near Denver, Colo., in what is believed to be the largest installation of its kind.

The arsenal produces a liquid waste product which, despite treatment, contains residual matter. The Chemical Corps, which operates the arsenal, considered it more desirable to have the liquid waste reduced by evaporation than by filtration, and asked the Army Engineers to make the lake a leakproof pan.

To carry out this assignment, the Engineers investigated a number of methods. Consideration was given to Portland cement, asphalt, asphalt planks, impervious compacted earth, grouting with chemicals, and the asphaltic membrane.

Partly because of economic reasons, the choice was the asphaltic membrane, the use of which was pioneered by the Bureau of Reclamation to make irrigation ditches impervious (ENR Sept. 13, p. 35).

The asphalt used is the last residue of the distillation of normal asphalt-base petroleum. A catalyst blown into it produces a chemical change that results in a very tough, rubbery membrane, and one that adapts itself to contours of the surface to which it is applied.

The contract, on a low bid of $497,000, was awarded the Long Construction Co., Billings, Mont. The price includes also the placement of vitrified clay pipelines with chemically resistant sealed joints to carry waste from the arsenal to the reservoir. The contract, started in June, is now almost complete. The technique of placing the asphalt, which Army Engineers regard as ingenious and effective, was worked out by the contractor.

The lake involved is roughly oval, approximately 2,900 ft across at one end and 1,600 ft across at the other. The lake is about 10 ft deep over most of its area. Artificially made, it is located in a natural depression made into a lake by placing a dike at one end.

• **Placing of membrane**—First, a wide strip was excavated to grade and then compacted with a roller to give a smooth

Membrane Is Used to Leakproof a Lake

surface. Preheated asphalt was brought to the site in insulated tanker trucks and then transferred to a distributor which was modified especially for this job. Modification consisted of placing the spray bar as an outrigger to one side rather than having it behind the distributor in the conventional manner.

Asphalt was then sprayed in a strip about 1,000 ft long and 12 ft wide, at a rate of 1.35 to 1.50 gal per sq yd.

Because application of the hot material at the total specified rate would have caused it to run, the membrane was built up in three successive applications. The angle of the spray bar was changed each time to give an even distribution. The result was a membrane that under close inspection was found to be free of holidays and remarkably uniform.

The next step was the placing of an earth blanket 1 ft thick atop the completed membrane. This was accomplished by elevating graders working in tandem to hoist earth across the working area to the far side of the completed membrane. They laid the blanket in successive strips about 1 ft wide until only 1 ft of the new membrane was left exposed. A light blade was then sent in to smooth out the earth blanket.

The work of the elevating graders accomplished the dual purpose of putting the blanket atop the membrane and preparing another strip for a new 12-ft strip of the membrane.

As a preliminary to placement of the new strip, a portable compressor unit traveled the edge of the strip to blow away dirt spilled on the exposed edge of the membrane during the placement of the earth blanket. The clean surface assured a tight bond between successive strips of the membrane.

Overlap between the various strips varied from 4 to 6 in.

The lake is so designed that no surrounding surface area drains into it. This is accomplished in part by the dike and drainage ditches around the lake.

Engineers of the Bureau of Reclamation at Denver cooperated with the Army Engineers, with assistance given by L. M. Ellsperman of the Bureau's chief engineer's office. The work was assigned to the Omaha District of the Corps of Engineers of which Col. Thomas J. Hayes is district engineer, J. O. Ackerman, chief of engineering, Henry A. Sikso, chief of foundations and materials, and Lyman S. Bray, a member of the foundations and materials branch. Area chief for the Corps of Engineers in the Denver area is Lieut. Col. Herschel E. Linn.

Tandem graders level a strip before applying the asphalt. Earth removed is dumped atop membrane to form the earth blanket which is then leveled with a light blade.

Distributor truck with spray bar in outrigger position sprays preheated asphalt over the graded surface. To avoid running, the asphalt was placed in three layers.

After earth layer is placed over the membrane covering, a portable air compressor is used to blow away dirt on the edge to assure a tight bond with the next strip.

SEABOARD CONSTRUCTION CO. SPEEDS 20 JOBS WITH GENERAL ELECTRIC TWO-WAY RADIO!

Instant communication co-ordinates 200 pieces of equipment with 20 construction projects smoothly... profitably!

When you've got to keep things moving at 20 different locations; get the most out of 200 costly machines; co-ordinate the work of widely-scattered manpower–the right answer is General Electric Two-Way Radio. That's the experience of Seaboard Construction Company, Brunswick, Georgia.

Spread over 150 miles, this fast-moving organization must have expensive equipment at the right spot, at the right minute with minimum outage and standby time. And qualified manpower must be available exactly when and where it is needed to eliminate bottlenecks, speed materials flow, and insure profitable progress on every project.

Solving such problems becomes routine operation with the instant communication and control made available with the G-E Two-Way Radio System. No piece of mobile equipment, no work crew is more than a voice away. Learn how your business can profit from the experience of this progressive construction company and many other forward-looking organizations in scores of industries.

For Sales and Service see "Radio Communication Equipment" in your Yellow Pages. Or, write: *General Electric Company Communications Equipment, Section X22116-22, Electronics Park, Syracuse, N. Y. In Canada, write: C.G.E. Electronics, 181 Lansdowne Avenue, Toronto.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

New Products

Steel Doors for Homes Come With Thresholds, Frames

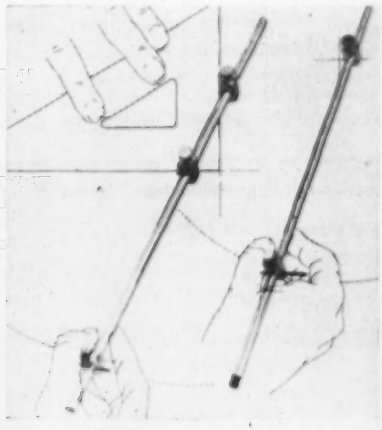
All-steel exterior doors for homes are now being marketed by Steelcraft. Besides the door itself, the complete unit includes frame, threshold and weatherstripping.

The door is insulated with 2½-lb density mineral wool. Treated to prevent rust, it comes with a baked-enamel prime coat. Finish painting is also available in a variety of colors, textures and patterns.

The frame is made of 16-ga steel and comes with factory-applied bronze weatherstripping. The threshold, extruded aluminum, has a built-in vinyl plastic seal. Steelcraft Mfg. Co., 9017 Blue Ash Rd., Rossmoyne, Ohio.

Ripple Pattern Enhances Sheet Copper Appearance

Chase Brass & Copper announces that sheet copper is now available in a new stock pattern called Ripple. The decorative highlights and shadow patterns produced by the deep ripple or wave design is intended to enhance the appearance of such products as fireplace hoods, range canopies, gutters and cornices. The material comes in 16-oz weight, in 36-in. and 96-in. sheets. Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.



Ellipses and Circles Drawn Using Simple Beam Compass

A simple "beam" compass can be used to draw circles up to 24 in. in diameter and, used as an ellipsograph, to draw ellipses with radii from ⅛ to 12 in., and to any degree from 10 to 65 deg, according to the manufacturer.

Two aluminum blocks, one with a pivot point and the other with a lead point, move along an aluminum beam and lock into place by thumbscrews to draw circles. A third block and different points are used to draw the ellipses.

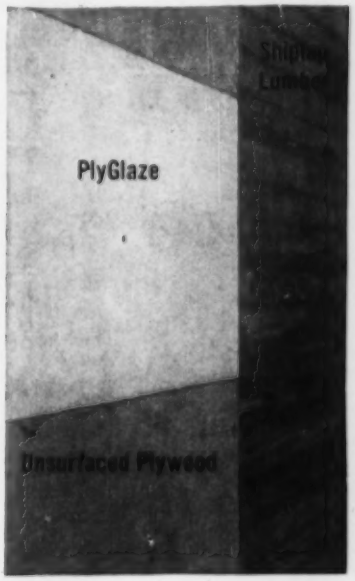
The Aero Beam Compass and Ellipsograph, as it is called, sells for $3.95. Aero Engineering Sales Co., P. O. Box 85, Azusa, Calif.

Light Centrifugal Pump

A 1-in. centrifugal pump weighing only 27 lb is capable of lifting water by suction up to 25 ft. It is called the Pick-Up Pumper. The manufacturer states that it is ideal for such jobs as watering lawns and gardens, washing equipment, transferring liquids, etc., being particularly useful where water pressure is low. A self-priming centrifugal pump type, it is powered by a 1½ to 2-hp gasoline engine. Construction Machinery Co., Waterloo, Iowa.

Vernier Target Added To Leveling Rod Line

A leveling rod featuring a vernier on the target reading to 1/1000 ft has been added to the Berger line. The 3-section rod, which is 10 ft long, has a target with a tension gib and locking screw. It can also be used in two sections for heights up to 6.7 ft. Retail price is $17.75, fob factory. C. L. Berger & Sons, Inc., 37 William St., Boston, Mass.



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FINEST SURFACE with PLYGLAZE® CONCRETE FORM PANELS

READ "finest" both ways: PlyGlaze *itself* has the finest, smoothest surface of any form material; PlyGlaze-formed *concrete* surfaces are the finest—smooth, even-textured, with no trace of grain pattern. Savings on finishing costs alone frequently offset slightly higher cost of this premium material. See Sweet's File or use coupon for more information.

Another member of the famous Tree Life Family of Forest Products
Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
Top-quality Exterior plywood (EXT-DFPA). Standard panel sizes.

ST. PAUL & TACOMA LUMBER CO.
Dept. ENR, Tacoma 2, Wash.
Please send free PlyGlaze literature.
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Address _____
City _____ Zone _____ State _____

Darex Diary

#13 of a series

by Henry L. Kennedy
Member, American Concrete Institute
Manager, Construction Products
Dewey and Almy Chemical Company

* Protective coating of concrete highways

* Curing air-entrained concrete

In these columns I have often referred to the excellent cement and concrete research laboratories Dewey and Almy maintains in Cambridge. There is another laboratory right at our New England doorstep which helps prove the performance of products made by the Construction Specialties Division. I am speaking, of course, of the New England climate.

Few areas of the country are more variable in weather. And under these conditions, our DARACONE water repellent, developed as a protective coating for all types of exterior masonry, has achieved a remarkable performance record.

DARACONE's popularity, of course, extends to many parts of the nation. However, I can think of no more dramatic proof of its value than is seen in the protection it provides for weather-buffeted New England's highways, bridges and buildings.

Vermont, for example, has used DARACONE on some 30 bridges in the Barre-Montpelier area alone, to arrest spalling. In New Hampshire, this specially-developed silicone has been successfully used on highway bridges, bridge decks, sidewalks and bridge structures, both for preventive maintenance and to arrest further deterioration of structures. Connecticut highway officials are enthusiastic about DARACONE for preventive maintenance, while in Massachusetts, DARACONE is used on all Toll Road bridges.

In a great number of the instances mentioned above, DARACONE has been at work for more than three years—a considerable period when you reckon with the extremes of weather encountered in this corner of the country.

DARACONE coverage on these jobs is between 80 and 180 square feet per gallon. Most jobs have been one-coat applications.

We have printed an interesting booklet on DARACONE. If you'd like a copy, just drop me a note, and ask for Booklet No. 3B1.

* * * * * * * * * * * * *

Air entrainment in concrete, as is universally known, provides improved durability and resistance to freezing and thawing. However, air entrainment itself is not an automatic solution to all concrete problems. For example, the temperature at which the concrete is placed affects the final result. Even more important is the interval between finishing and the time the concrete is salted for de-icing purposes. Concrete must be allowed to mature. The concrete slab must cure and dry out to the extent that excess water is no longer available as freezable water.

To simulate field exposure conditions, laboratory freezing and thawing tests were conducted with a 10% $CaCl_2$ solution in our Cement and Concrete Research Laboratories. A number of air-entrained concrete specimens were cured moist for 28 days and immediately subjected to 24-hour cycles of freezing and thawing. Companion specimens were cured moist for 14 days, and then dried out for 14 days before being subjected to the freezing and thawing cycles. At 40 cycles, the moist-cured showed 17% loss of weight, and the properly-cured but dried-out specimens only 2% loss. At 60 cycles, the moist-cured showed 31% loss, while the dried-out showed but 3% loss.

Field results substantiate these laboratory tests. On these jobs where air-entrained concrete showed a decided lack of durability, freezing weather had set in within six weeks of the time the concrete was finished, and salts had been applied shortly afterwards. When concrete is placed after October, a good rule is to keep salts off your highway for the first year.

DEWEY AND ALMY
CHEMICAL COMPANY
DIVISION OF W. R. GRACE & CO.

Cambridge 40, Massachusetts; San Leandro, California; Montreal 32, Canada

Obituaries

William H. McAlpine, 82, retired special assistant to the Chief of Army Engineers, died Nov. 1, in Washington, D. C. Mr. McAlpine had retired from the Corps of Engineers regular staff in 1952 after a half century of service. He was recognized as the dean of the Army's civil engineers.

Maj. Gen. E. C. Itschner, Chief of Engineers, said in tribute to Mr. McAlpine, "Substantially all important federal navigation projects planned or constructed in this 20th century have benefitted from his help and guidance."

Although most of his efforts had been directed to the Corps' civil works program, he attended conferences of American and British representatives to consider the feasibility of constructing artificial harbors for landing of troops on the Normandy beaches. Mr. McAlpine served as consultant on the design and engineering problems involved in constructing the third set of locks for the Panama Canal, the MacArthur Lock on the St. Marys Falls Canal, Sault Ste. Marie, and the ore locks at Escanaba, Mich. He was also chief engineer on the extensive navigation developments on the Ohio and Upper Mississippi River.

He was chief of the Engineering Division, Civil Works, from 1934 to 1942 before becoming special assistant to the Chief of Engineers.

George W. Saathoff, 72, a consulting engineer died in Sea Girt, N. J., Nov. 10. A specialist in power plant engineering, Mr. Saathoff was born in Litchfield, Ill., and was graduated in 1906 from the University of Illinois. After graduation, he joined the Cities Service Co., where he remained for 35 years. He was a vice-president and director of Electric Advisors, Inc., a subsidiary of Cities Service, until 1946, when he started his own consulting engineering business.

H. Raymond Weeks, 55, president and treasurer of H. Raymond Weeks, Inc., architects and engineers, of Durham, N. C., died Oct. 27. A graduate of the Georgia Institute of Technology, he was associated for a number of years with an engineering firm in Atlanta. He was a native of Palmyra, Mo.

Edward J. Ruxton, 74, treasurer and general manager of the Adams & Ruxton Construction Co., of Springfield, Mass., died Nov. 6 at Springfield. He was a member of the State Board of Standards and Appeals in the Department of Public Safety and had been a member of the Springfield city council.

Reclamation's E. R. Crocker Retires After Long Service

E. R. Crocker, project manager of the U. S. Bureau of Reclamation's Santa Barbara Area Projects, retired Nov. 2 to bring to a close a government service career that began in 1909.

In 1927 he was appointed a member of the engineering staff of the bureau's chief engineer's office in Denver. In 1933 he was promoted to assistant head of the canals division and in this capacity he contributed to the design and construction of thousands of miles of irrigation canals and hydraulic structures. Outstanding projects on which Crocker worked include the All American Canal in Southern California, the Columbia Basin Project canals in Washington, the Friant-Kern and Delta-Mendota canals in California's Central Valley and the Transcontinental Divide Diversion, which implements the Colorado-Big Thompson Project in Colorado.

Crocker became project engineer on the Cachuma Project in the Santa Barbara Area Projects section in 1948. He directed the construction of Cachuma Dam, the Tecolote Tunnel, the South Coast conduits and the several reservoirs for the water supply facilities for Santa Barbara and the agricultural lands in Santa Barbara County.

Crocker, in recognition of his contributions to the advancement of irrigation in the West, received the Department of Interior's distinguished service award in 1954.

(*Men and Jobs continued on page 46*)

Europeans Gather U. S. Know-How

Five European engineers, in this country to study foundation construction techniques, recently discussed deep pier foundations and observed river bank construction when they visited the Dravo Corporation plant in Pittsburgh. The visitors are on a month-long tour sponsored by the International Cooperation Administration and are traveling to New York, Pittsburgh, Cincinnati and Vicksburg. From left, Phillippe P. F. Lesourd, Paris Industrial Electric Society; Heinrich R. Hochstrasser, Saarbergwerke, Saarbrucken; W. A. Robinson, assistant chief engineer, Dravo Contracting Div.; Kurt Weise, Reconstruction Department of the Saar Government; H. H. Sturdy and B. E. Rhoades, general manager and chief engineer, Dravo Contracting Div.; Willi Lembert, Nikolaus Lembert Construction Co., Fechingen; Maurice C. Auberger, Societe Provencal du Pieu Express "Les Pieux Fronte."

Darex
products at work

DARACONE
puts a "raincoat" on the New Hampshire Turnpike

From the time it was first constructed, this section of the New Hampshire Turnpike—near the principal toll station at Hampton Plaza—was subjected to terrific erosion, partly from freezing and thawing, partly from mechanical wear aggravated by frequent application of de-icing salts.

Soon it became apparent that the surface would have to be *sealed* to prevent further deterioration. Toll Road Maintenance men chose Dewey and Almy's DARACONE for this vital job.

Applied swiftly and economically to the concrete roadway by truck-borne spray bar—an area 900' long by 12' wide could be covered in four minutes—DARACONE met the challenge. After 3 years, state highway engineers rate DARACONE at 90 to 95% efficiency!

DARACONE's silicone-coating protection has been used with equally fine results in all types of masonry structures. Each project reaffirms this statement: DARACONE *fulfills silicone's promise!*

Write for further details, now.

Other Dewey and Almy Products For the Concrete Industry

DAREX AEA—World's leading air-entraining agent

DARALITE—Air-entraining agent for use with lightweight aggregates

DARASEAL—Premium quality concrete curing compound

DARAWELD—For bonding new concrete to old

DA

DEWEY AND ALMY CHEMICAL COMPANY
DIVISION OF W. R. GRACE & CO.

Cambridge 40, Massachusetts

here's the West's Answer
to your **Concrete** Questions!

* **What parting compound delivers smooth concrete without leaving stains or residue that interfere with painting?**
"Thompson's Water Seal eliminated the problem of stains in our tilt-up concrete walls. Now panels are easily removed from the surface slab and painting proceeds speedily."
ASSOCIATED CONSTRUCTION AND ENGINEERING COMPANY OF CALIFORNIA, San Francisco, Calif.

* **Is there one curing, separating and form-sealing method that easily produces hard, dust-free surfaces?**
"Of all the chemicals we tested in our tilt-up work, Thompson's Water Seal proved the cheapest insurance against costly grief and painting troubles."
BAYCITIES CONSTRUCTION CO., Oakland, Calif.

* **Is it possible to prevent all moisture damage in concrete under pressure or capillary action, regardless of weather?**
"As waterproofing specialists in heavy construction work, we use Thompson's Water Seal on all concrete moisture problems with constant success and at a great saving."
STANLEY H. KOLLER CONSTRUCTION, Crockett, Calif.

THOMPSON'S (deep penetrating) WATER SEAL is now Nationally distributed by
THE PITTSBURGH PLATE GLASS COMPANY
For complete specifications, write for new booklet 7-A-2

Thompson's
MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

E. A. THOMPSON CO., INC. • MERCHANDISE MART • SAN FRANCISCO 3, CALIF.
San Francisco • Los Angeles • San Diego • Portland • Seattle
Dallas • Houston • St. Louis • Denver • St. Paul • Philadelphia

Men and Jobs Briefs . . .

• **Associations**—The American Institute of Steel Construction elects as president **N. P. Hayes,** head of the Carolina Steel and Iron Company, Greensboro, N. C. . . . **John H. Dahlman** of the Dahlman Construction Co., Milwaukee, Wis., is elected president of the General Contractors Association of Milwaukee.

Albert L. Love, Jr., Texas paving engineer, is appointed district engineer for New Mexico of The Asphalt Institute and **Charles A. McKeogh** of San Antonio, Tex. is named to succeed **William H. Rhodes,** retiring district engineer for New Orleans.

• **Military**—The Air Force promotes **Col. Joseph E. Gill,** Facilities Support, Office of the Assistant Chief of Staff Installations, Hqs USAF and **Col. Christian F. Dreyer,** Director of Installations, Strategic Air Command to the grade of Brig. General.

• **Careers**—Widely experienced in wood research, **William D. Eisenhauer** joins the technical staff at the laboratory of Timber Engineering Company, research affiliate of National Lumber Manufacturers Association . . . **L. C. Cheek, Jr.,** of Chapel Hill, N. C., is appointed city engineer at Charlotte, N. C. He succeeds **Lloyd G. Richey,** who resigned to join a Charlotte highway construction firm.

• **Business**—The Kreisler-Borg Construction Company, White Plains, N. Y., promotes two of its members: **Thomas J. Grasso,** vice president-general superintendent, has been elevated to the board of directors, and **Samuel C. Florman** is raised to vice president-project manager and made a member of the board of directors . . . **Empire Soils Investigations, Inc.** moves their office and laboratory to Ithaca, N. Y. Five members of the consulting engineering firm of H. E. Bovay, Jr., are promoted to associate members. They are **S. J. Bell, R. O. Grimes, J. R. Maxwell, Guy Furgiuele** and **S. L. Newman.**

• **Honors**—The Professional Engineers of Oregon honor **Eugene Caldwell,** vice president and general manager of Hyster Co. Portland, Ore., as the Engineer of the Year of Oregon for 1956. The citation is based on community service activities . . . **Ralph DeSimone** head of a construction consulting firm under his own name, is made president of the Heights Colleges Alumni Association of New York University.

HOW 8,000 lbs. was safely hoisted 75 feet in THREE minutes flat!

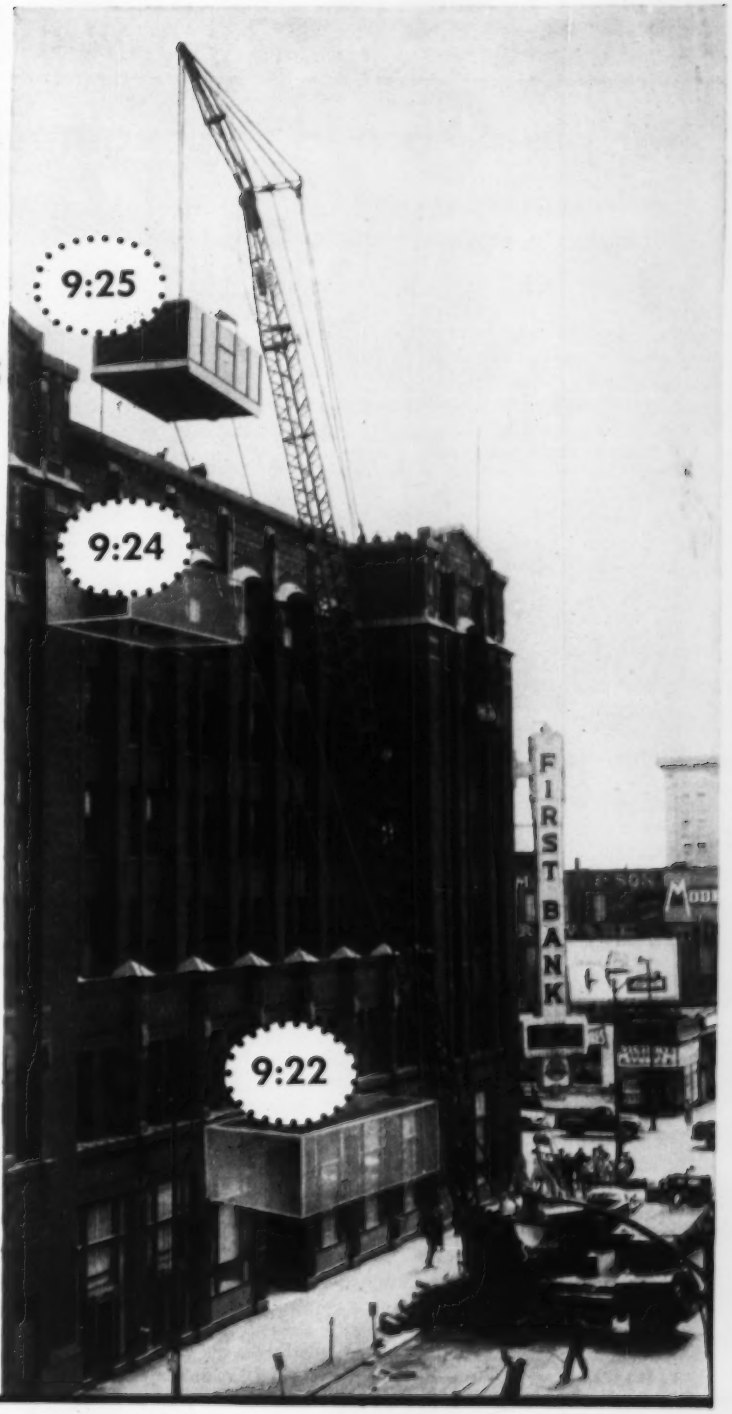
Schumacher used 110 foot boom and 15 foot jib on his 25 ton

BAY CITY CRANEMOBILE

Three minutes from street to roof—180 seconds and an 8,000 pound air-conditioning unit was placed on top of the Associates Investment Building in South Bend, Indiana —six stories up!

This particular feat—achieved by Peter Schumacher Sons, Inc., general contractors and engineers—was amazing enough to the public so that it was televised and featured in the local newspaper. Yet CRANEMOBILE users know a CRANEMOBILE takes on jobs like this in stride!

High lifts are only one phase of a CRANEMOBILE'S work, for a CRANEMOBILE is a busy CONTRACTOR'S most versatile, most profitable piece of equipment. For lifting, loading, pouring and dozens of other work-projects a BAY CITY CRANEMOBILE'S power, smoothness of operation, ease of control, balance, and speed are paying dividends to owners everywhere. Call your dealer or write direct for illustrated catalog.



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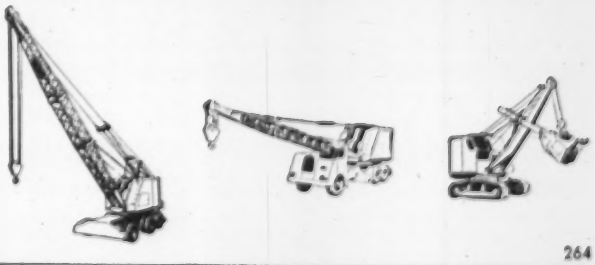
BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



264

Shopping Abroad for Engineers

A plan to quickly and immediately alleviate the U. S. shortage of engineers suggests recruiting foreign engineers

An idea for partial solution of the engineer shortage in the U.S. comes from an unexpected source. International shopping for engineers is the idea; Cesar Jayme, assistant manager of the Northwest Orient Airlines office in Manila, is the source.

In brief, what is suggested is that American companies recruit engineers from those Asiatic and European countries not heavily engaged in industry and, therefore, having no shortage of engineers. This would provide a temporary, partial solution of the shortage (ENR Nov. 8, p. 28) until U.S. supply catches up with demand.

To particularize this idea, the Republic of the Philippines is offered as a case in point. Here is a country that is predominately agricultural. Her industries are growing, but at a modest pace.

Reconstruction projects are plentiful creating an atmosphere that entices Philippine college men into engineering. But the field is said to be so hemmed in by a handful of well-known engineering firms that graduates in many cases have to resign themselves to jobs alien to their training.

Can these "surplus" engineers be utilized to help alleviate U.S. shortage?

• **Precedent**—Previously, Jayme was instrumental in having NWA launch an exchange program in 1949 to meet the much-publicized medical-man stortage in the U.S. The venture had been primarily promoted to increase passage to the U.S. through NWA. But the idea snowballed into an atmosphere of national interest that has resulted in 300 to 400 doctors and nurses coming to the U.S. annually to receive advanced and specialized training.

Employing the same approach, Jayme recently began working on an exchange program for engineers.

To feel out possibilities, the NWA ran an advertisement in a Manila daily last April 16 calling for graduate engineers to work in the U.S. A few days later, a total of 850 applications had been received, representing engineers in these fields: civil, mechanical, electrical, chemical, mining, architectural, radio and geodetic.

NWA personnel immediately went to work. An examination of various Philippine universities and colleges led them to conclude that the Filipino engineer approaches the American in training. Next, to bolster its project, the NWA secured an administrative order from the President of the Philippines creating a committee to take charge of the Filipino participation in the exchange program. This committee was authorized to endorse for placement, qualified applicants for the consideration of the appropriate U.S. agency administering the program.

NWA then began feeling out American companies on the possible placement of Filipino engineers.

• **In favor**—Many of the companies contacted expressed interest. Encouraging replies came from Western Electric, Ford and Wisconsin Employment Service, among others. And the Michigan State Highway Department has already requested approval from the State Department to hire 10 engineers; while Electric Auto-Lite Company wants six for its Niagara Falls plant.

To bring together the right engineer for the right company, the best plan seems to be one in which the interested companies would send recruiting teams to Manila to pick their men. Selected applicants could then be turned over to NWA which will handle their processing and documentation from beginning to end. An alternative plan would be to have brochures on typical Filipino engineers; or perhaps an educational and personal history outline of each applicant.

The Filipino Engineer

An examination of the curricula of various Philippine schools by NWA came up with the following:

Engineering is a five-year course.

Curriculum compares favorably with that of U. S. universities.

All textbooks are authored by Americans; instruction is in English.

Methods and courses are quite standardized.

Laboratory work, at the University of the Philippines, for example, involves materials testing, soil mechanics, sanitary engineering and fluid mechanics (in a lab designed at the Iowa Institute of Hydraulic Research and equipped for model studies of hydraulic structures).

• **Objections**—By far the biggest problem to overcome is the reluctance of American companies to hire foreign engineers on a temporary basis; and a U.S. State Department directive prohibits permanent employment for foreign technical men. The State Department's action appears to be premised principally on the fear that foreign technical men would not only be competing with American citizens, but may even deprive some of employment.

Other companies—such as Boeing Aircraft which needs hundreds of engineers—point out that they cannot use aliens because of security reasons. However Curtiss-Wright—which employs European engineers—solved this by constructing separate buildings to keep its foreign engineers separated from classified material.

Also, American firms in the Philippines are believed to oppose the NWA project, because of the fear that the wages of their Filipino engineer employees would have to rise to conform with the higher salary scale in the U.S.

One final argument is that the Philippines, for instance, graduates only some 1,500 engineers annually and this number is negligible. The answer given to this is that the Philippines is only one country of many from which to draw engineers. And, utilizing all possible sources, the number of engineers that can be had should more than meet the demand.

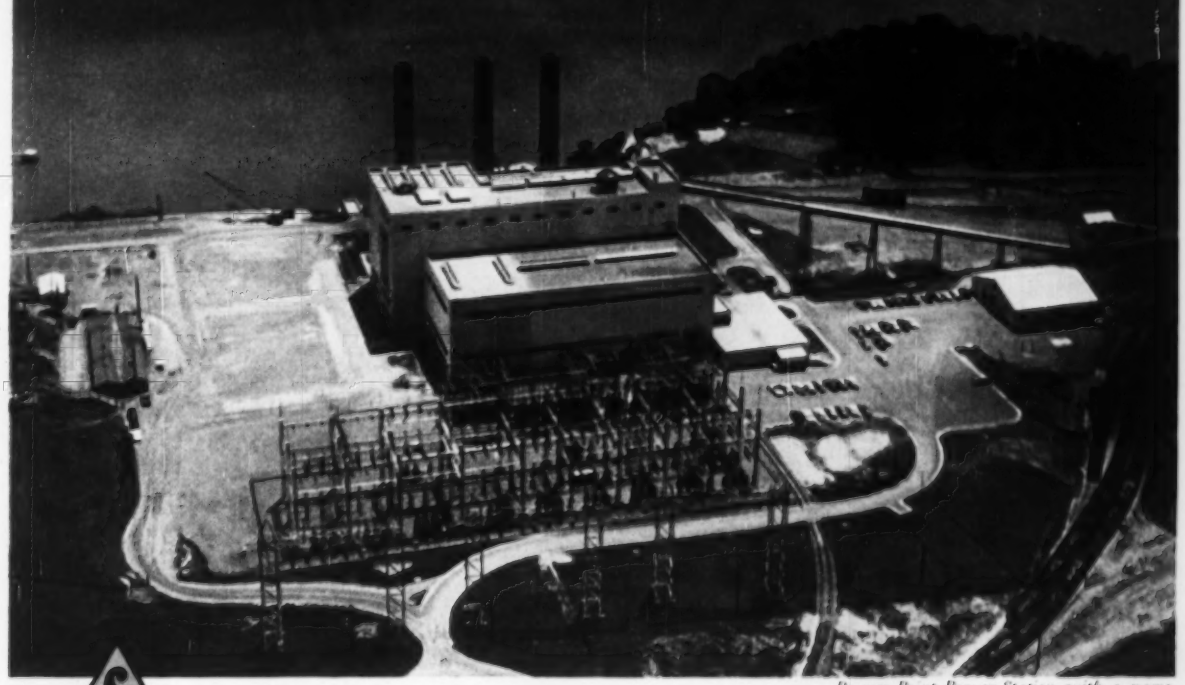
Argentina to Resume Work on Irrigation Project

The Argentine government has allocated 30 million pesos (about $1.7 million dollars at the official exchange rate of 18 to 1) for construction of a dam for irrigation purposes at Las Maderas in the Province of Jujuy. This project, which was begun many years ago, has been in an abandoned state since 1935.

The Las Maderas dam will supplement the dam at La Cienaga, about three miles to the northwest of the new site. The new dam is expected to add some 4,500 hectares of irrigated land in this area. This will bring the total area of irrigation here to about 13,000 hectares.

The project involves construction of a dam 164 ft high across the throat of the Las Maderas gorge. The reservoir that is created will be filled by the Las Maderas stream and by waters from the Perico and Grande Rivers. Water from these two rivers will be brought in by a canal system.

POWER
FOR A SURGING SOUTHLAND



Possum Point Power Station with a name plate capacity of 220,000 kw is located on the Potomac River near Quantico, Virginia

The third generating unit of the Possum Point Station of the Virginia Electric and Power Company – designed and built by Stone & Webster Engineering Corporation – went on the line in mid-1955, with a name plate rating of 100,000 kilowatts.

The Engineering Corporation is presently installing four 150,000 kilowatt units in three other generating stations being designed, constructed or extended for this client for commercial operation in 1957, 1958 and 1959.

These additional power facilities are examples of the forward looking steps being taken by Virginia Electric and Power Company to satisfy the rapidly expanding power requirements of the VEPCO system.

Write or call us for information as to how our experience can be of assistance to you.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY of STONE & WEBSTER, INC.

New York Boston Chicago Pittsburgh Houston Los Angeles San Francisco Seattle Toronto

What is the best

It's GM . . . America's First Choice Diesel . . . and here's why:

Best Diesel for mining—or any other job, for that matter—is the one that does the most work at the lowest cost, above or below ground.

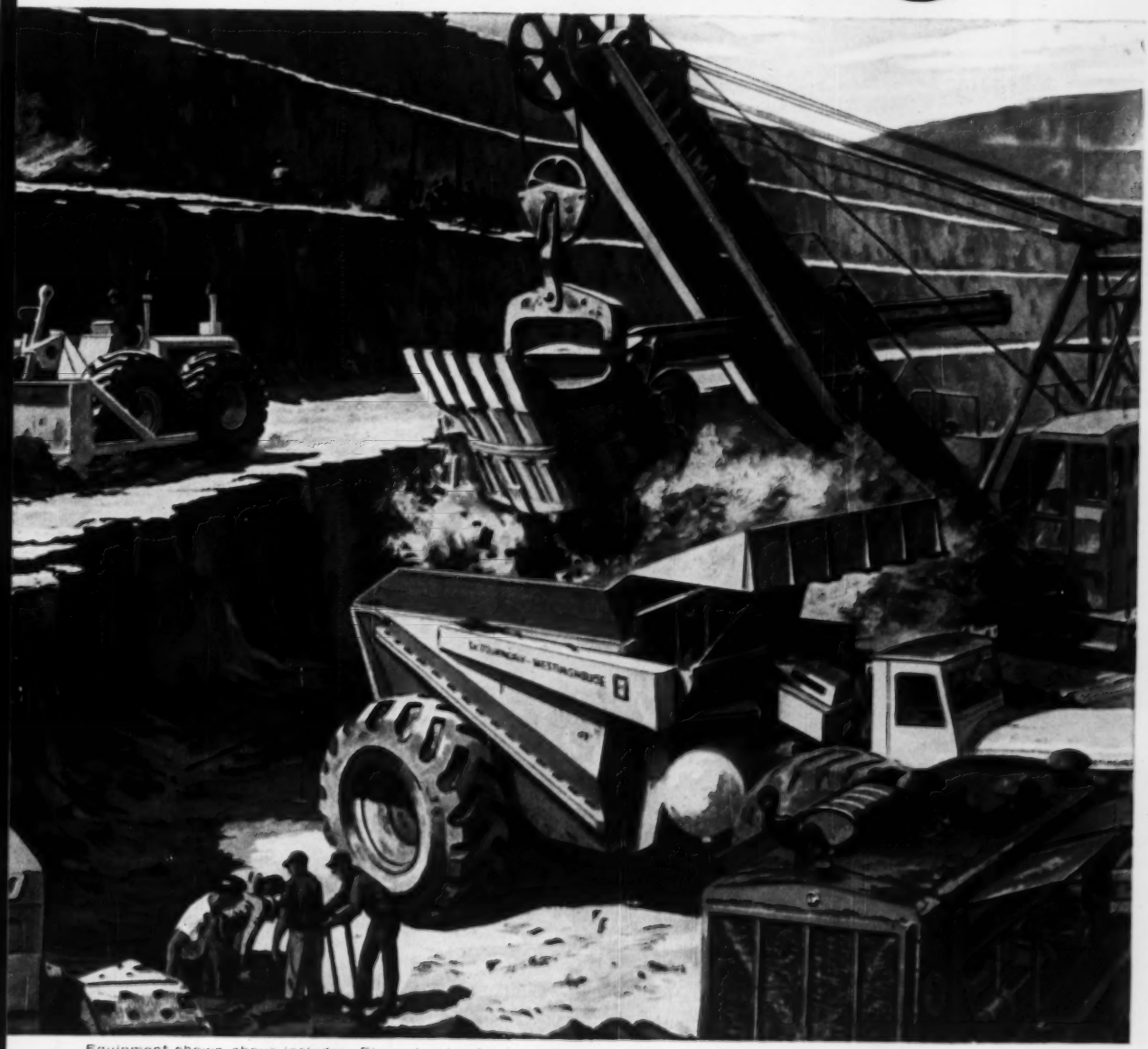
That's why General Motors Detroit Diesel engines today handle more different mining jobs than any other Diesel.

These compact, clean-running 2-cycle engines drive loaders, air compressors, draglines, locomotives, pumps, shovels and the most powerful trucks and tractors. GM Diesels are available in more than 1000 different applications of power machinery for every job from 30 H.P. up.

And with the recent addition of Turbopower engines to the line, increased horsepower with greater efficiency is now available in the same size engine. These new Turbopower Diesels develop up to 17% more power on no more fuel —or the same power with a 15% saving in fuel.

Next time you order new equipment—or repower old—be sure to specify GM Diesel. It's America's FIRST CHOICE Diesel *because it does more work at less cost!*

Diesel for Mining?



Equipment shown above includes: Eimco tractor-loader; LeTourneau-Westinghouse Tournatractor and Rear Dump; Lima Paymaster shovel; Gardner-Denver air compressors. Write for list of over 1000 GM Detroit Diesel power applications.

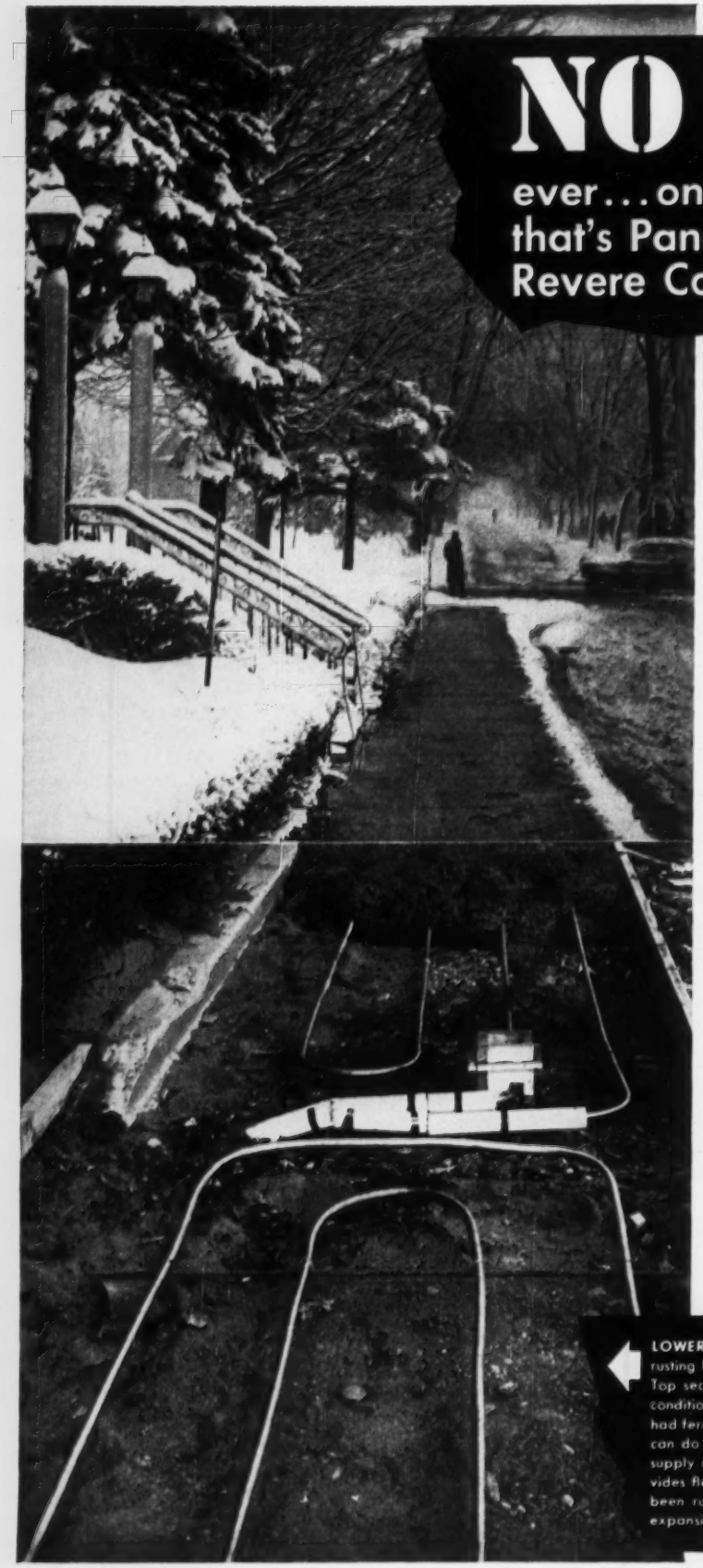
DETROIT DIESEL

Engine Division of General Motors

Detroit 28, Michigan
In Canada: General Motors Diesel Limited, London, Ontario

Single Engines . . . 30 to 300 H.P. *Multiple Units . . . Up to 893 H.P.*

America's Largest Builder of Diesel Engines



NO SNOW

ever...on the sidewalk that's Panel Heated with Revere Copper Water Tube

Huge strides are being made by this method of snow removal. No wonder, shoveling and accidents due to snowy walks are eliminated . . . while the time and labor saved pays for the installation in short order.

That's why you'll find snow melting panels also being used on driveways, loading platforms, entrance aprons, service stations, pedestrian ramps at railroad stations, airports and similar spots. One application which bears special mention is the use of coils in garages. They quickly melt the snow on cars, keep floors dry as well as keep the repair shop floors warm so mechanics can lie right on the bare concrete in comfort.

And when you make the panels of Revere Copper Water Tube you have these added advantages: Copper can be bent to conform to the terrain. Bendability permits use of sinuous coils, while the 60-foot lengths of tube mean fewer fittings which, when joined by solder means joints that stay tight. Copper tube cannot rust, rot or deteriorate. That's why, on the inside, full flow and low frictional resistance are maintained throughout its long life. While external moisture will not harm it from the outside.

Keep ahead of the parade. Recommend Panel Heating for snow removal. Revere's Technical Advisory Service will be glad to help you in the proper application of Revere Copper Tube in working up your plans.

FREE! Instructive 16mm Full Color Motion Picture, "The ABC of Radiant Panel Heating." Write Advertising Department for details.

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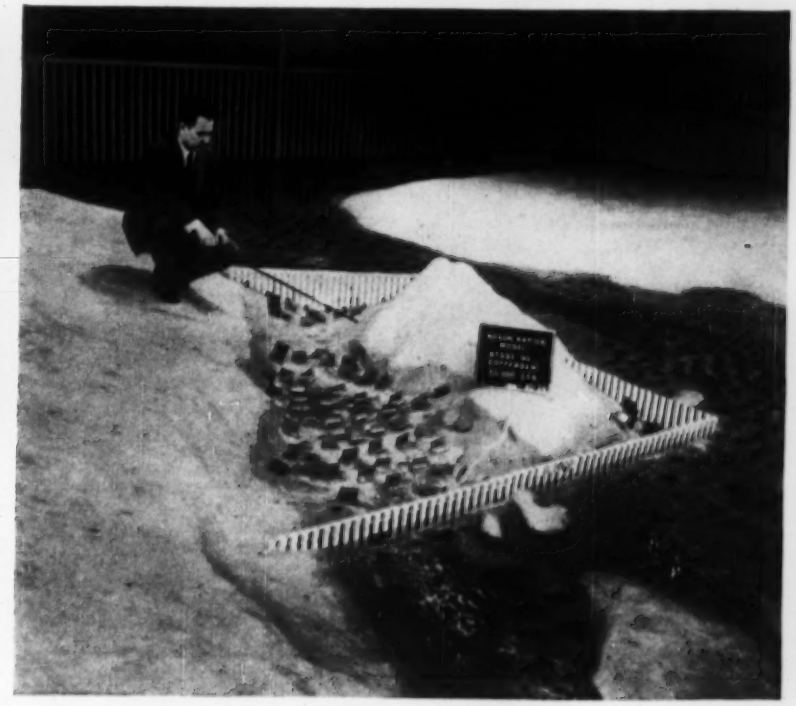
LOWER SECTION OF PHOTOGRAPH shows how non-rusting Revere Copper Tube was imbedded in concrete slab. Top section of photo shows same walk under actual snow conditions. Note bends. Think of all the joints necessary had ferrous pipe been used. And think, too, of what seepage can do to rustable materials. Note insulation used on each supply and return line to the coils from the mains. This provides flexibility in the take-offs from the mains, which have been run below the slab, to allow for movement due to expansion and contraction.



Hydraulic research at Washington State College is headed by E. Roy Tinney (above). Flow studies and tests on hydraulic structures such as the cofferdam for Noxon Rapids (right) are all a part of his increased business as . . .

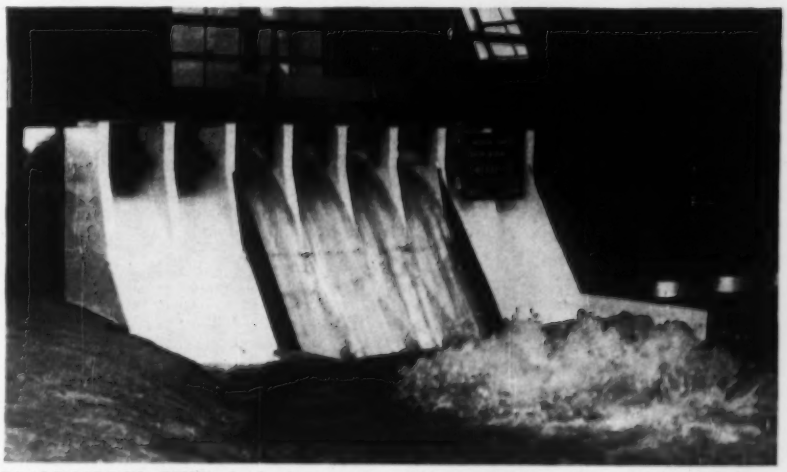
Western Lab Checks Hydro Designs

An important center for hydraulic model testing has emerged in the Pacific Northwest in just two years. It's located in Pullman, Wash., at Washington State College (5,700 enrollment) far removed from important metropolitan areas. More large-scale model tests have been handled there recently than in any other non-federal lab.

Reason for the development is relatively simple. There's a big boom in non-federal hydroelectric projects in the Pacific Northwest and there is no other place in the area where designers and contractors can check plans and construction procedures. Previously this type of work had been farmed out to such relatively far removed places like Worcester Polytechnic Institute or Minnesota's St. Anthony Falls Laboratory.

The hydraulic research laboratory is officially a function of the Division of Industrial Research of the Washington State Institute of Technology, a major branch of Washington State College. The Division, under its director, R. L. Albrook, is a branch of the Institute of equal and parallel standing to the College of Engineering.

The Division of Industrial Research carries on studies under contract on many things important to the economy of the Pacific Northwest. These include air pollution, wood technology, mining, soils and highway investigations, sewage treatment and school design.



SCALE-MODEL TEST checks functioning of Noxon Rapids spillway bucket. This test followed the cofferdam study (top photo) by 10 months.

Since the hydraulic model testing program began, scale models of complete projects have been undertaken for these important dams: Noxon Rapids, Brownlee, Pleasant Valley, and Rocky Reach. And studies have been undertaken on parts of projects such as the spillway and penstock gates for Priest Rapids.

• **Young leadership**—Heading up the hydraulic research is E. Roy Tinney, 31, a brilliant hydraulician who not too

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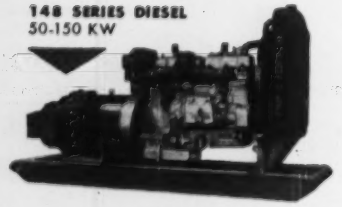

148 SERIES DIESEL
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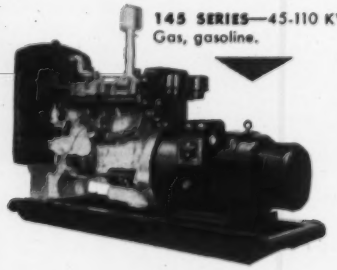
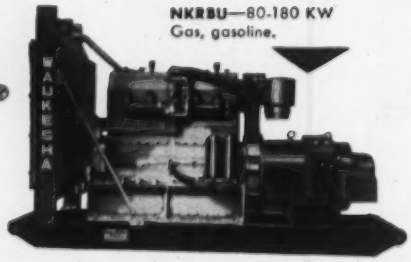
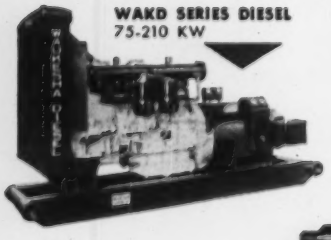


145 SERIES—45-110 KW
Gas, gasoline.

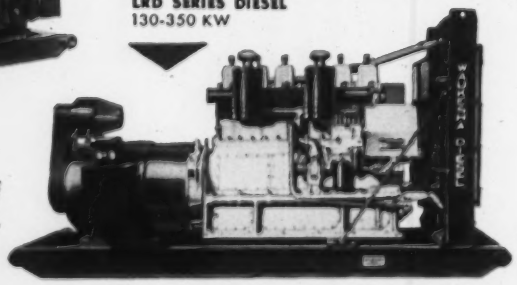
WAK SERIES—75-170 KW
Gas, gasoline.



NKRBU—80-180 KW
Gas, gasoline.



WAKD SERIES DIESEL
75-210 KW



LRD SERIES DIESEL
130-350 KW

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325

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long ago was a student and staff member at Minnesota's St. Anthony Falls Lab. A native of Canada, Tinney earned a bachelor's degree from the University of British Columbia and a master's degree in civil engineering from the University of Washington. This was followed by a Ph.D. from the University of Minnesota.

Work has come so rapidly to the laboratory that often a model is built out-of-doors with a building cover added later. This was the case with the Pleasant Valley model and is currently the situation with the Rocky Reach model. Magnitude of the problem can be seen in the fact that the Rocky Reach model built on a scale of 1 to 75 is 110 ft long and 30 ft wide.

• **Model built in stages**—Model testing is a time-consuming operation. On the models built at Pullman, construction has taken from 2½ to 3 months. Then the test program might take anywhere from two months to two years. Reason is that many phases of the hydraulics of a project are considered. For example, on the Noxon Rapids project a 1 to 50 scale model of the river was built first. Testing started out with the proposed cofferdam arrangement. Then a model of the dam was built on the river model with hydraulic features tested as the model construction advanced. Included were different spillway and gate structure arrangements as well as flow through the powerhouse.

Selection of scale is an important early function in the testing program. The scale must be such that hydraulic similitude will obtain to correctly reproduce the phenomenon to be considered. Other factors that have to do with scale selection are size of the laboratory, pump capacity and total cost of the model.

The comprehensive models at Washington State have ranged from a 1 to 50 scale for Noxon Rapids and Pleasant Valley through a 1 to 70 scale for Brownlee to a 1 to 75 scale for Rocky Reach. On some riverbed models in which the general characteristics of flow for a long reach of the river is to be investigated scales may range up to 1 to 600. Some of these large-scale models are distorted so that depth scale is exaggerated.

• **Blue chip clients**—Customers of the laboratory read like a blue book of hydro project designers. They include Ebasco, Harza, International Engineering, and Stone & Webster (through Chelan County PUD). And industrial clients are increasing. For example, Pacific Coast Engineering Co. of Alameda, Calif., is sponsoring the study on fixed-

wheel penstock gates for Priest Rapids Dam. Total value of model work conducted at Pullman the last two years is in the neighborhood of $200,000. Full-time staff include five engineers and 25 other technicians.

Tinney looks for the model work to continue for some time. He calls it a long-term boom. Specific proposals for new models are already in the mill. One would require a site two blocks long which means that the model would have to be built away from the crowded state college campus. But finding a level area that size in the Palouse country of eastern Washington is not easy.

The laboratory does other hydraulic research than the model described in the foregoing. Complicated pipe systems are noticeable in the lab. And, although he admits that the studies are exciting, Tinney refrains from going into details due to confidential nature of the work.

As for the future, the lab expects to continue on big model studies as long as the boom lasts. But it is geared to go into industrial application of hydraulics and expansion of fundamental research. Even before the model study work began, the lab had installed the first commercial McIlroy electric network analyzer which has been used by clients from all over the West for the solution of water and gas distribution problems.

AEC Fellowships to Advance Nuclear Energy Technology

The Atomic Energy Commission has established a program of special fellowships to encourage students to pursue courses of study in the fields of nuclear engineering and the physical sciences.

Part of the commission's general program for aiding the field of education, the fellowships are designed to help overcome the shortage of trained nuclear engineers and scientists.

The program will be administered by the Oak Ridge Institute of Nuclear Studies, under the supervision of the Oak Ridge Operations Office of the commission. Applications will be processed before Mar. 1, 1957.

About 150 fellowships carrying stipends of $1,800, plus tuition and dependency allowances, will be awarded to students registered in, or accepted by, a college or university where a program of graduate study in nuclear energy technology has been developed comparable to the one-year course of study at commission schools.

Fellowships will be awarded on a one-year basis. Options to renew for an additional year will be considered only under special circumstances.

Pendleton Woolen Mills,
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Architect: Wick and Hilgers,
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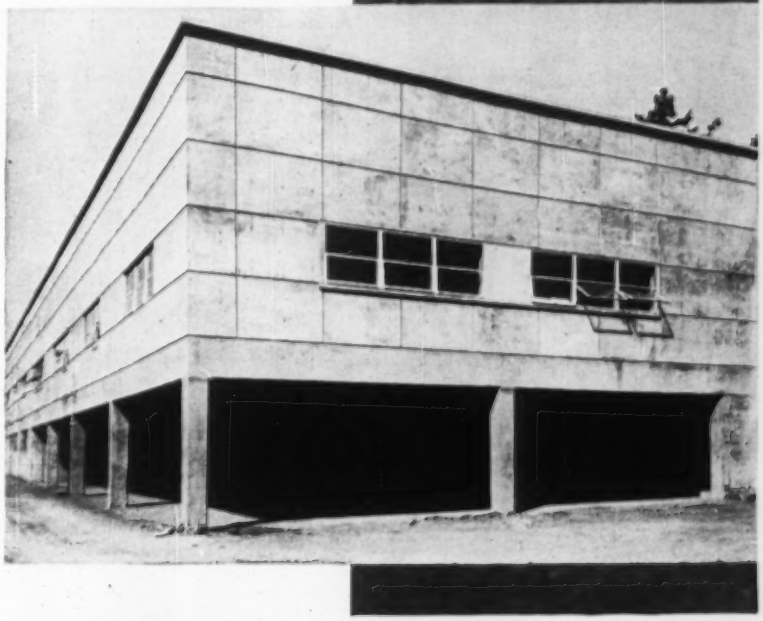

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Unit Prices

Mountain Highway in Idaho A $2.7-Million, 2-Year Job

This four-lane highway through a canyon in northern Idaho for the Department of Highways will replace the old Fourth of July Summit Section of U.S. Highway No. 10 in Kootenai County. The plant mix bituminous surface will be built to interstate standards. J. A. Phelps is district engineer for the Department of Highways in Boise.

This contract for a 7.184-mile section let to Fred H. Slate Co. & E. C. Hall Co. of Portland, Oregon, at $2,731,683, is only 0.06% below the second low bid, but is 29.7% below the sixth high bid. The contractor must maintain heavy traffic over the construction site, over the present road and over special detours to be built under this contract.

The job divides up into structural excavation, 47.2% of the contract price, paving 26.9%, drainage 7.35%, rolling and tamping 6.4%, class A concrete and reinforcing metal, rails, fences, guide posts and the cleanup take the remaining 12.15%.

Bids on 1,550,000 cu yd of unclassified excavation range from $0.82 to $1.20 per cu yd. Crushed rock for the base course drew bids $1.75 to $2.75 per ton of rock with maximum sizes of 1 in. and 2 in. and from $1.85 to $3.00 per ton of ¾-in. rock.

Asphaltic road mix bids run from $47 to $70 per ton, while bids on plant mix bituminous surface, class B and D, range from $3.60 to $6.25 per ton. Asphaltic road mix for prime and seal coats drew bids from $0.21 to $0.25 per gallon and emulsified asphaltic road material ranges from $0.17 to $0.25 per gallon.

Class A concrete must contain six bags of cement per cu yd and must have a strength of 3,000 lb per sq in. Bid prices range from $75 to $135 per cu yd.

Culverts will use corrugated plate for 120-in. and 126-in. pipe. All other sizes will be standard and extra strong corrugated metal chosen by the contractor for pipe which is not specified in the table below and for pipe which offered reinforced concrete as option. Bid prices range from $65 to $80 per lin ft of 10-gage pipe, 120 in. in diameter, and from $75 to $120 per lin ft of 8-gage pipe having a diameter of 126 in.

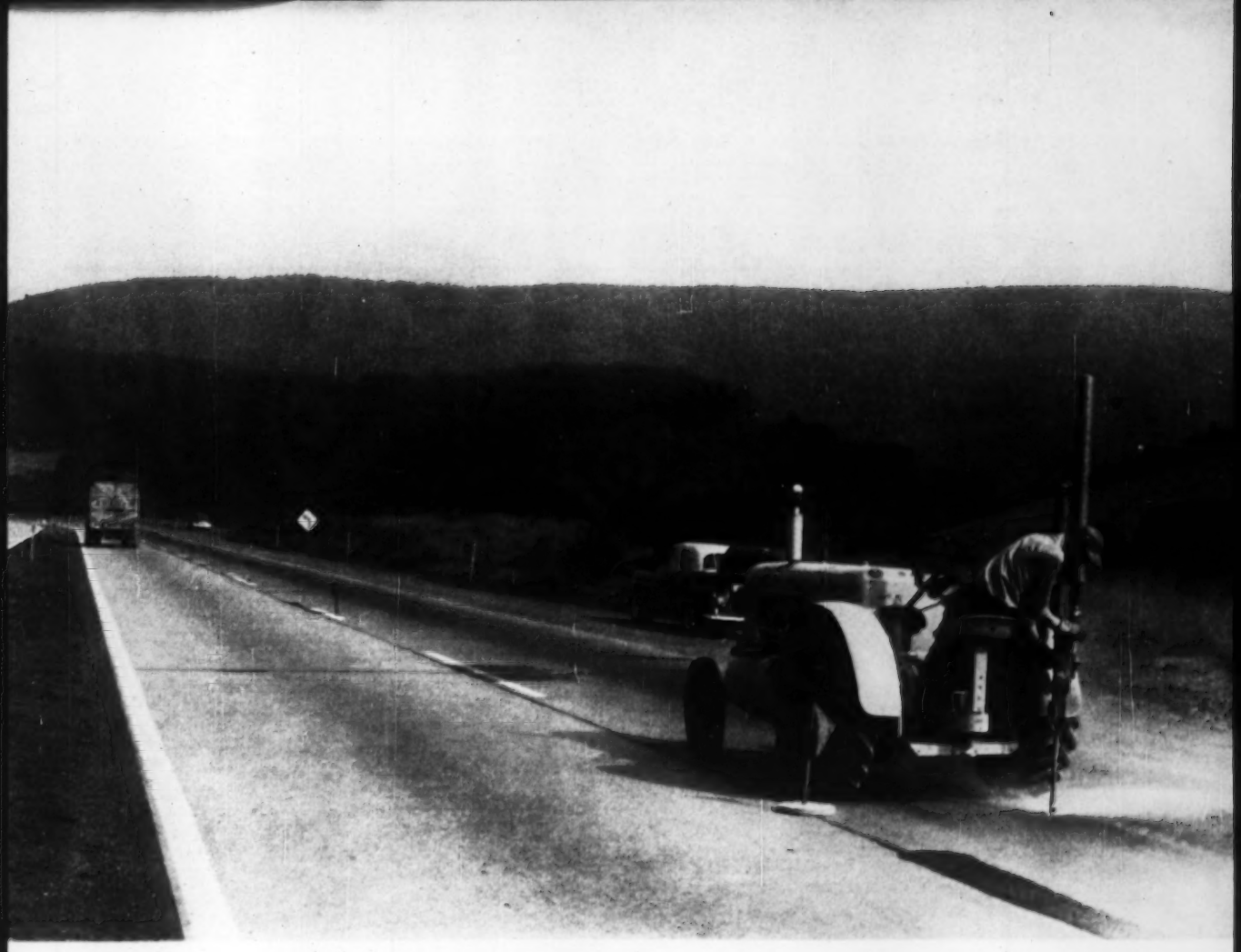
Minimum wage rates to be paid under this contract include $2.27 for general labor, $2.42 for paving form setters, $2.57 for pipe layers, $2.60 for concrete mixers, spreading machine and finishing machine operators, $2.65 for road rollers, $2.85 to $3.10 for road pavers, $2.35 to $2.85 for truck drivers and $3.10 to $3.34 for power shovel and crane operators. Drivers and helpers handling sacked cement shall receive $0.15 per hour premium pay.

The six bidders on this Federal Aid project include:

1C	Fred H. Slate Co. & E. C. Hall Co., Portland, Oregon	$2,731,683
2	Morrison-Knudsen Co., Inc., Boise, Idaho	2,733,389
6	Kiely Construction Co., Butte, Montana	3,884,017

Bids: 10-18-56 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	ac	135	$500.00	$700.00
Grubbing	ac	52	300.00	250.00
Culvert, remove	ea	1	1,000	300.00
Conc guard rail, remove	lf	2,200	1.00	1.00
Conc headwall, remove		22	0.35	0.40
Exc, unclassif	cy	1,550M	0.82	0.83
for struct, Sch No. 1	cy	110	10.00	10.00
Sch No. 2	cy	4,200	4.00	3.00
Haul	yu	130M	0.75	0.30
Water embankm	Mgal	30,200	1.00	1.00
base & surf crse	Mgal	5,300	2.50	1.50
Rolling, power roller	hr	1,480	8.50	6.00
tamping roller	hr	7,500	10.00	6.00
pneu tire roller	hr	7,500	8.50	7.00
Tamping mech	cy	9,080	2.50	2.50
Furrow ditches	sta	6	50.00	30.00
Base, crse, cr rock, 1" max type A	t	61,000	1.75	1.95
¾", max type B	t	83,200	1.85	2.05
2" max	t	30,000	1.75	1.95
Exist rdbed cl A, recond	mi	2	750.00	800.00
Cr rock in wind ¾" max	t	3,100	1.85	1.95
Asph rd matl RC-1 for prime	gal	87,500	0.21	0.20
Blotter matl, cl C	t	1,500	3.25	3.00
Mix finish & roll cl A	m	2	2,000	1,000
Asph rd matl MC-3 for rdmix	t	156	47.50	48.00
pene, 85-100, for pl mix	t	3,050	38.00	44.00
Bit surf, pl mix cl B	t	28,800	3.85	3.60
D	t	28,500	3.85	3.60
Asph rd matl RC-5 for Seal	gal	67,600	0.21	0.20
Cov ct matl cl 4	t	3,400	5.00	4.00
Conc cl A	cy	339	75.00	90.00
Metal, reinf	lb	37,800	0.15	0.17
Pipe culv, 12"	lf	150	3.00	3.00
18"	lf	4,400	4.00	5.00
24"	lf	2,200	6.00	7.00
Pipe culv, 24", bit ct CMP or or RCP, extr str	lf	500	6.00	8.00
24" bit ct CMP, 12-gage	lf	240	7.75	10.00
30"	lf	130	8.00	10.00
30", bit ct CMP, 10-gage	lf	280	12.00	15.00
30", bit ct CMP, or RCP, extr str, 12-gage	lf	350	9.50	11.00
36"	lf	180	12.50	13.50
48", bit ct CMP or RCP, extr str, 10-gage	lf	210	20.00	21.50
60"	lf	74	27.00	28.00
66"	lf	170	31.00	33.00
72"	lf	400	36.00	37.00
CMP, 48"-60", salv	lf	441	15.00	6.00
Pipe culv, corr plate, 120", 10 gage	lf	144	65.00	71.00
126", 8 gage	lf	184	75.00	81.00
Pipe arch, corr plate 7' 11" x 5' 7", 10-gage	lf	210	50.00	57.00
8' 2" x 5' 9", 10-gage	lf	420	51.00	58.00
10' 8" x 6' 11", 10-gage	lf	154	66.00	76.00
10' 11" x 7' 1", 8-gage	lf	220	67.50	79.00
Stl beam type gd rail	lf	21,500	3.25	3.50
Guide posts type 4	ea	950	3.00	5.00
W re fence type 1-a	lf	1,400	0.40	0.35
type 1-B	lf	21,000	0.45	0.35
Stl gates 10', type 2	ea	2	150.00	60.00
Project markers	ea	2	25.00	50.00
Right of way markers	ea	100	12.00	7.50
Drop inlet type 2	ea	44	100.00	180.00
3	ea	35	120.00	200.00
Lined interceptor ditch	lf	1,200	2.50	5.00
Roadside cleanup	ac	100	150.00	180.00
Asph rd matl, SS-1 emulsified	gal	110M	0.22	0.25

Contract awarded: 10-22-56
To be completed: 9-15-58
Liquidated damages: $800.00 per calendar day



Underseal Work on Penn Turnpike Done 45% Faster with One Tractor-Compressor and Drilling Attachment

. . . not only is pavement drilling faster, but costs are lowered through savings in equipment and manpower

One self-propelled Le Roi Tractair has replaced a parade of drill runners and hose-drag helpers struggling along behind truck-towed compressors on the busy Penn Turnpike. This tractor-compressor increases the speed of pavement drilling by 45% on asphalt underseal work. At the same time, it provides a tremendous reduction in equipment and labor costs.

The old method of pavement drilling required a large crew with hand-held pneumatic drills, another crew to drag hose, and two or more truck-towed compressors. Work was slow and expensive. Often underseal crews had to stand around waiting for the drilling operation. And heavy Turnpike traffic was tied up behind the project.

A money- and time-saving solution was found in the Le Roi Tractair, operated by one man. It's a combination 42-hp wheel tractor and a 125-cfm air compressor that can be equipped with a wide variety of mounted attachments and air tools. In this instance, the Le Roi-Cleveland Trac-Jac is the attachment used on the Tractair. The Trac-Jac is set vertically at right angles to the pavement where it swings easily so that the drill point can be centered over location marks made by surveyors. Bits bite into concrete rapidly because the Trac-Jac has a quick-acting air feed.

On this job, the Le Roi Tractair with Trac-Jac attachment drills 100 holes per hour, 12 inches deep through concrete with an average hole spacing of six feet. This "self-contained" unit is all that is needed to drill pavement faster at much lower cost. It also permits traffic to proceed during work without serious interference.

There are many ways that the self-propelled Le Roi Tractair can increase production and cut costs. It can do other highway jobs, and countless tasks in light and heavy building. Many efficient attachments are available, plus dozens of Le Roi-Cleveland Air Tools. See your Le Roi distributor.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products.

7-48

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct 25; Next, Nov 29
- Cement, Aggregates, Ready-mixed Concrete, Asphalt: Last, Nov 8; Next, Dec 6
- Wage Rates, Building Board, Lath, Insulation: Last, Nov 1; Next, Nov 29
- Iron & Steel Products, Pipe: Last Nov 15; Next, Dec 13

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		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ⅜"	¾"
Atlanta	†	$83.00	$88.00	$77.50	$76.00	$79.50	$83.00	$81.00	.....	.....			$22.32	$27.24
Baltimore	*	92.00	96.00	96.00	98.00	98.00	102.00	114.00	.....	.....	$170.00	$186.00	25.92	31.60
		105.00g	*105.00g*	*123.00g*	*123.00g*	*123.00g*	*125.00g*	*155.00g*	*$144.00*	*$144.00*				
Birmingham	†	86.00	88.00	81.00	88.00	91.00	96.00	111.00	.....	.....	115.00	180.00	21.78	26.58
		107.00	*107.00*	*108.50*	*108.50*	*108.50*	*111.50*	*110.00*	*107.00*	*107.00*	.....	.....		
Boston	*	102.00f	102.00f	107.00f	107.00f	107.00f	11 8.00a	.....	.....	.....	.....	.....	25.92	31.60
		98.00n	*98.00n*	*116.00*	*116.00*	*116.00*	*123.00*	*126.00*	*126.00*	*141/143*				
Chicago	**	96.00	99.00	93.00	107.00	115.00	116.00	111.00	.....	.....	139.00	139.00	22.45	27.37
		106.00	*106.00*	*119.00*	*117.00*	*117.00*	*118.00*	*126.00*	*126.00*	*126.00*				
Cincinnati	*	101.25	102.50	90.00	98.25	103.00	111.50	119.50	.....	.....	141.75	141.75	25.00	30.48
		108.00	*108.00*	*107.75*	*118.25*	*114.75*	*116.00*	*138.00*	*138.00*	*138.00*	.....	.....		
Cleveland	**	93.00	94.00	99.00	97.00	97.00	97.00	.....	.....	.....	.....	.....	25.37	30.93
				113.00	*110.00*	*110.00*	*110.00*	*136.00*	*136.00*	*128.00*				
Dallas	‡‡	75.00	82.00	75.00	75.00	72.00	72.00	130.00	.....	.....	130.00	140.00	18.72	22.80
Denver	*	*Not in stock*		*185.00*	*185.00*	*185.00*	*140.00*	*156.00*	*160.00*	*16 .00*	.....	.....	13.92	16.98
Detroit	‡	118.00	118.00	114.00	115.00	118.00	122.00	.....	.....	.....	130.00	.....	25.00	30.48
		186.00	*186.00*	*190.00*	*190.00*	*190.00*	*156.00*	*188.00*	*198.00*	*198.00*	.....	.....		
Kansas City	*	125.00	125.00	120.00	125.00	135.00	135.00	.....	.....	.....	.....	.....	16.58	20.18
		188.00	*188.00*	*185.00*	*180.00*	*180.00*	*155.00*	*165.00*	*185.00*	*$10.00*	.....	.....		
Los Angeles	‡	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*120.00*	*120.00*	*120.00*	.....	.....	16.61ab	20.25ab
Minneapolis	#	*140.00*	*140.00*	*145.00*	*145.00*	*145.00*	*145.00*	*185.00*	*185.00*	*185.00*	.....	.....	19.89	24.25
Montreal	ab	92.00	102.00	92.00	92.00	110.00	128.00	.....	.....	.....	123.00	123.00	.....	.....
		180.00	*180.00*	*180.00*	*180.00*	*180.00*	*180.00*	*170.00*	*170.00*	*170.00*				
New Orleans	†	92.00	92.00	97.00	97.00	98.00	100.00	124.50	.....	.....	136.00	134.00	18.72	22.80
	†	*108.50*	*108.50*	*105.00*	*118.50*	*118.50*	*118.50*	*131.00*	*131.00*	*151.00*				
New York	¶	112.00	115.00	120.00	125.00	125.00	125.00	165.00	.....	.....	240/265	240/265	25.92	31.60
		.....	.....	*120.00*	*132.50*	*124.00*	¶*124.00*	*169/180*	*169/180*	*169/180*				
Philadelphia	‡	Range from $117.00 to $137.00					117/137	117/137	.....	.....	214/224	214/224	25.92	31.60
		Range from $131.00 to $168.00					*131/168*	*156/168*	*168.00*	*168.00*				
Pittsburgh	2	130.00	140.00	130.00	155.00	140.00	145.00	.....	.....	.....	155.00	.....	25.92	31.60
		130.00	*140.00*	*130.00*	*155.00*	*140.00*	*145.00*	.....	*900.00*	*900.00*	.....	.....		
St. Louis	#	113.00	115.00	123.00d	125.00d	125.00e	131.00e	.....	.....	.....	.....	.....	18.72	22.80
		.....	.....	*131.00*	*133.00e*	*133.00e*	*139.00e*	*189.00e*	*189.00*	*189.00*	.....	.....		
San Francisco	A	*88.00*	*88.00*	*85.00*	*85.00*	*85.00*	*85.00*	*120.00*	*130.00*	*140.00*	.....	.....	12.22	14.91a
Seattle	†	*68.00*	*76.00*	*74.00*	*76.00*	*76.00*	*80.00*	*95.00*	*95.00*	*98.00*	.....	.....	.....	.....
Toronto	a	100.00	103.00	98.00	98.00	100.00	100.00	117.00	.....	.....	100.00	.....	.....	.....
		114.00	*117.00*	*108.00*	*130.00*	*130.00*	*140.00*	*140.00*	*145.00*	*150.00*				

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad., truckload lots, 8/6 Mfrbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. °a Spruce. °b Tax exempt. °c 5M lots. °d 8, 10, & 12 ft. lengths. °e 8 to 16 ft. lengths. °f Hemlock °g No. 1 common. °j 8ft. lengths. °k No. 3 common. °n #3. A inel rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $143.00; on ¾", $156.00. Exterior ¼", $148.00, ¾", $164.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. °a Lower rate by water shipment. °b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength

	A quality	B quality
Atlanta	77½c	78½c
Baltimore	74½d	76½d
Birmingham	82%	83%
Boston	73-10%	72-10%
Chicago	72%	72%
Cincinnati	74%	74%
Cleveland	74-2-10%	74-2-10%
Dallas	78%	78%
Denver	73%	73%
Detroit	74-10-10%	74-10-10%
Kansas City	76-10%	76-10%
Los Angeles	70%	76%
Minneapolis	71-10%	71-10%
Montreal	40-10-5%bc	40-10-5%b
New Orleans	78%	78%
New York	79%	79%
Philadelphia	74%	76%
Pittsburgh	73%	73%
St. Louis	76-10%	76-10%
San Francisco	60%	68%
Seattle	67%	70%

EXPLOSIVES

Per lb., 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2540
Baltimore	.2540
Birmingham	.1990
Boston	.2540
Chicago	.2540
Cincinnati	.2540
Cleveland	.2940
Dallas	.2615
Denver	.2790
Detroit	.2540
Kansas City	.2790
Los Angeles	.2565
Minneapolis	.2690
Montreal	22.05A
New Orleans	.2590
New York	.4425g
Philadelphia	.2540
Pittsburgh	.2540
St. Louis	.2590
San Francisco	.2540
Seattle	.2565

Price of 60% Ammonia Gelatin is $1.15 per lb. higher than 40% in U.S., $1.75 per 100 lbs. higher in Canada.

Glass: °a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. °b Discount from list, Apr. 1951; sales tax included, but 8% tax exemption not allowable for. °c 77% for single strength °d Discount 6/15/52. °e 77% for double strength

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. °g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. °h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.60

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1915	$0.2265	$0.2465
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.1965	.2315	.2515
Rocky Mtn. States	.1965	.2315	.2515
Pacific N.W. States	.1940	.2290	.2490
Pacific S.W. States	.1915	.2265	.2465

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.81	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.84	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.88	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.88	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		8" x 8" x 8' Untr.	8" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		4.00a		4.60a
New York	S. L. Sap Pine	2.00d	4.00d	3.00g	6.00g
	Mixed Oak	2.50d	4.50d	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.75		3.00	
	Red Oak	2.65	3.20a	2.80	3.50a
	Sap Pine or Cypress		3.10a		3.45a
San Francisco	Douglas Fir	2.13ef	3.09ef	2.88bef	4.63caf

Tr.—Treated; Untr.—Untreated. a Creosoted. b 7" x 9" x 8'. c Empty cel d 8 x 8 x 8'6" e Green. f f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham.

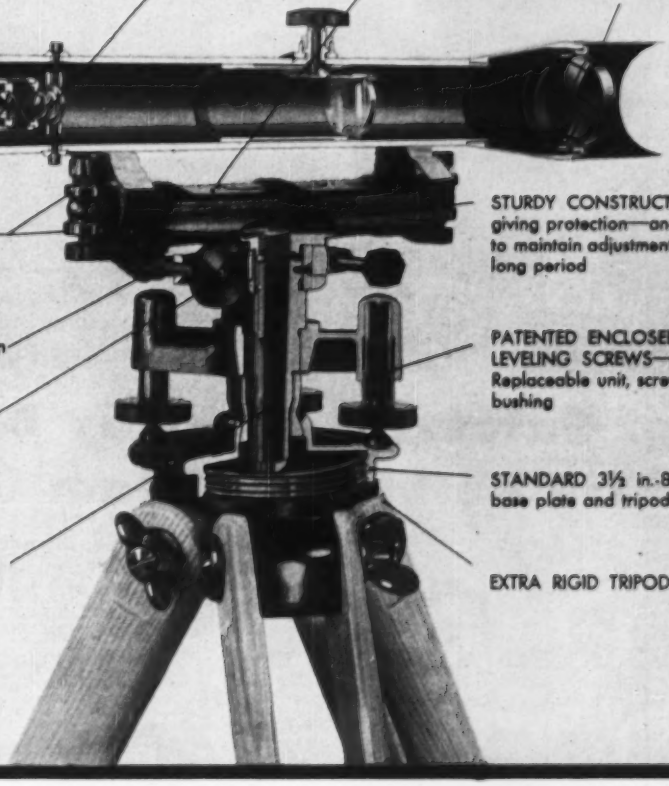
CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

The Gurley Engineers Level

Wye or Dumpy Types



VARIABLE POWER EYEPIECE
Permits adjustment of magnification when illumination changes

NON-METALLIC EYEPIECE CAP (for comfort in extreme weather)

HAZE FILTER—Improved image contrast under nearly all light conditions

LEVEL ADJUSTING NUTS—Positive opposing nuts hold adjustment

TANGENT SCREW opposed by leaf-type spring; smooth, continuous operation

NON-METALLIC HEADS for leveling, tangent, clamp and pinion screws (for comfort in extreme weather)

LONG TAPERED CENTERS—accurately fitted; free movement at all temperatures

COVERED GLASS RETICLE—Cross lines on glass. Covered for protection and easy cleaning

LEVEL VIAL—Finely-ground, sensitive, uniform in movement

SUPERIOR OPTICS—Made in Gurley's optical department to precise standards; coated for greater light transmission

STURDY CONSTRUCTION giving protection—and rigidity to maintain adjustment over a long period

PATENTED ENCLOSED LEVELING SCREWS—Replaceable unit, screw and bushing

STANDARD 3½ in.-8 thread base plate and tripod head

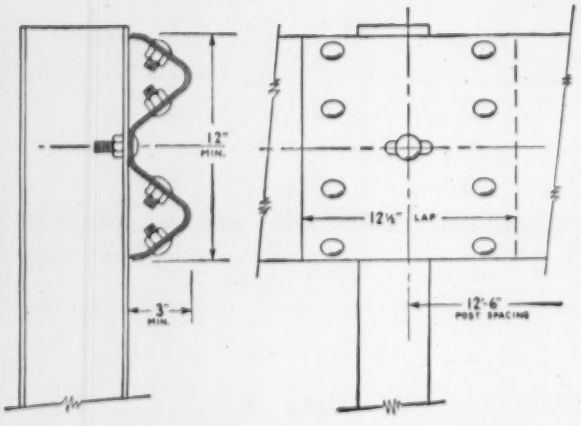
EXTRA RIGID TRIPOD

Model 372 Dumpy Level

GURLEY

W. & L. E. GURLEY, TROY, N. Y.

For Safety at Highway Danger Spots Use Bethlehem Beam Guard Rail



Used at sharp turns, embankments and bridge approaches, Bethlehem Beam Guard Rail forms an effective and dependable service for today's high-speed traffic. At these danger spots, Bethlehem Beam Guard Rail has the strength to withstand considerable shock from a colliding vehicle, yet enough flexibility to re-direct the vehicle parallel to the rail.

Used as a highway divider, Bethlehem Beam Guard Rail helps to reduce accidents in respect to opposing streams of traffic.

Bethlehem Beam Guard Rail is made from 10- and 12-gage steel, bolted with a 12½-in. overlap to make one continuous, impact-absorbing beam. It's easy to install and requires no anchor rods, special tools or complicated adjustments. Details and dimensions are illustrated here.

The nearest Bethlehem sales office will be glad to supply complete information on Bethlehem Beam Guard Rail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Lenox**—NOVITIATE—BA 12/4—New England Province of the Society of Jesus, Very Rev. William E. Fitzgerald, provincial, 297 Commonwealth Ave., Boston, Jesuit Novitiate, Shadowbrook. $3,000,000. Plans deposit $100, refundable. J. Gerald Phelan, 211 State St., Bridgeport, Conn., archt. CD 4/5.

▲ **Mass., Amherst**—PUBLIC HEALTH—BA 12/7—State, University of Mass., Kenneth Johnson, treas., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U-301, public health bldg., University of Mass. $1,250,000. Plans deposit $100, refundable. James H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 10/6/54.

▲ **Connecticut**—HOUSING—BA 12/14—U. S. Eng., 150 Causeway St., Boston, Mass., Capehart Family Housing Hartford Defense Area, Manchester, Portland, Middletown, ENG-19-016-57-86. $1,056,000. Plans deposit $100. CD 11/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me. CA $1,209,453, est. $1,200,000. gate house headquarters, A.I.A., shop, fire station, auto maintenance shop, officers' quarters, club, chapel, PX service, Air Force Station, ENG-19-016-57-55, TOPSHAM, ME. U. S. Eng., 150 Causeway St., Boston, Mass. CD 9/27, under LB.

BUILDINGS—LB & CA

▲ **S. A. Allen Constr. Co.**, 330 Rutherford Ave., Charlestown, Mass. LB Approx. $1,000,000. TEMPLE and SCHOOL, Hammond Pond Parkway, NEWTON, MASS. Temple Mishkan Tefila, 122 Elm Hill Ave., Roxbury, Mass. Bids Nov. 5. CD 10/15.

▲ **E. and F. Constr. Co.**, 94 Wells St., Bridgeport, Conn., CA $1,398,000. DORMITORIES and DINING HALL, University of Bridgeport, BRIDGEPORT, CONN. University of Bridgeport, 200 Park Pl., Bridgeport, Conn. Bids Oct. 30. CD 11/8, under LB.

▲ **Wadhams & May Co.**, 15 Lewis St., Hartford, Conn., CA $2,068,000. Orville H. Platt West Side SENIOR HIGH SCHOOL, Lucchini Farms, Coe Ave. and Oregon Rd., MERIDEN, CONN. City, Bd. Educ., 22 Liberty St., Meriden, Conn. Bids Oct. 29. CD 11/1, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Del., Wilmington**—SCHOOL—BA 11/29—School Bldg. Comn., Mount Pleasant Special School Dist., Duncan Rd. and Phila. Pike, Bellevue, Senior High School, Marsh Rd. and Washington Blvd., Brandywine Hundred, New Castle $3,200,000. Plans deposit $35. Dollar, Bonner & Blake, 1103 Madison St., archts. CD 12/19.

▲ **N. Y., New York**—SCHOOL—BA 12/6—Director Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr. P. S. 7, Lexington Ave. between E. 119 and E. 120 Sts., Manhattan. $2,100,000. Plans deposit $25. CD 8/10.

HEAVY CONSTRUCTION—LB & CA

▲ **Fischback & Moore, Inc.**, 226 E. 41 St., New York 17, N. Y. LB $1,189,671 (5 bidders) furnishing, installing conduit wiring and misc. electrical equip. for 59th Street Power Plant, Manhattan, Contr. No. P-163, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn, N. Y. Bids Nov. 9. CD 10/3.

▲† **C. J. Langenfelder & Son, Inc.**, 8427 Pulaski Hy., Baltimore, Md. CA $12,544,177. runway imprvs., Olmsted Air Force Base, MIDDLETOWN, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore 3, Md. CD 10/19, under LB.

BUILDINGS—LB & CA

▲ **Christensen & Nielson**, 422 Liberty St., Schenectady, N. Y. LB $1,645,736. CENTRAL SCHOOL and BUS GARAGE, CORINTH, N. Y. Bd. Educ., Corinth Central School Dist., Corinth, N. Y. Bids Oct. 23. CD 10/12.

▲ **Clemens Farms, Inc.**, c/o Richard Koelle, R. D. No. 1, Doylestown, Pa. Separate Contracts. $2,450,000. RESIDENTIAL DEVELOPMENT, 98 units, Green St., DOYLESTOWN, PA.

▲ **Severn River Constr. Co.**, 2 W. University Pkwy., Baltimore 18, Md. Owner Builds. $1,529,500. 190 brick veneer DWELLINGS, Rogers Court, Boro Rd., Kessler Court, Riverview Section, BALTIMORE, MD.

Diller-Plank, Inc., Willow St., Lancaster Co., Pa. LB $939,000. (3 bidders) concrete, steel, masonry Northeast HIGH SCHOOL addns., alterations, ELKTON, MD. Cecil Co. Bd. Educ., Elkton, Md. F. Edward Tormey, 2127 Maryland Ave., Baltimore 18, Md. archt.

▲ **Mullan Contg. Co., Inc.**, 3945 Greenmount Ave., Baltimore 18, Md. LB $2,743,000. 2 story, brick, concrete, steel Arbutus SCHOOL, Sulphur Spring Rd., Arbutus, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Nov. 7. CD 10/23.

▲ **Mullan Contractors**, 3945 Greenmount Ave., Baltimore 18, Md. CA $10,000,000. OFFICE, APARTMENT PROJ., SHOPPING CENTER, MOTEL, York Rd. south of State Teachers College, near TOWSON, MD. Greater Towson Corp., c/o contractor. Hopkins, Pfeiffer & Fenhagen, 10 E. Mulberry St., Baltimore 2, Md., archts. James Posey, 10 E. Pleasant St., Baltimore 2, Md., mech. engr., V. R. P. Saxe, 1701 St. Paul St., Baltimore, 2, Md., engr. CD 5/16.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Alabama-Georgia**—BA On Or About 12/20—U. S. Eng., 2301 Grant St., Mobile 7, Ala., constr. gated spillway at Fort Gaines Lock and Dam, Chattahoochee River, CIVENG-01-076-57-37. $5,000,000-$10,000,000. CD 10/17/55.

BUILDINGS—BA

▲ **La., Baton Rouge**—HOTEL—BA 12/1—A. C. Glasell, Captain Shreve Hotel, Shreveport, 10 story Heidelberg Hotel for Heidleberg Hotel, Lafayette St., Baton Rouge, La. $2,000,000. Extended date. W. G. Knoebel, 906 Sidney St., St. Louis, Mo., archt. CD 10/23.

▲ **La., Alexandria**—HOUSING—BA 1/8—Contg. Officer, Base Procurement Office, England Air Force Base, Alexandria, construct and finance 300 family housing units, (Capehart), Bids No. 16-600-57-34. $3,500,000. Plans deposit $100. CD 11/9.

BUILDINGS—SLC

▲ **La., Fort Polk**—HOUSING—U. S. Eng., Box 1229, Galveston, Tex., soon lets contract, construct and finance 1 and 2 story family housing, 2,000 units, (Capehart), Inv. 57-8. $30,000,000. CD 11/7, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Highway Office Bldg., 1221 E. Broad St., Richmond, The Leo Butler Co., Inc., 9217 51st Ave., College Park, Md. CA $4,063,041. Contr. D-2 (Hampton Roads Proj.), constr. waterproofed depressed roadway with 4 overhead bridge structures, 3 buildings, two of which house storm water pumping stations and one of which houses sanitary sewage pumping station, incl. equip. 1.1 mi. between centerline Stations 1115 plus 00 to 1173 plus 00 in City of Norfolk. Bids Oct. 31. CD 11/5, under LB.

▲ **E. G. Singletary & Co.**, 105 Homewood Dr., Greensboro, N. C., CA, $1,144,600, South Buffalo sewage treatment plant addns., GREENBORO, N. C. City, City Hall, Greensboro, N. C. Bids Oct. 30. CD 11/9, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Fla.—**Marion Constr. Co.**, Box 577, Ocala, Fla., CA, $932,800. limerock base, rework, wid'n., existing base, b. conc. surf. course, binder course, drainage structures 6.909 mi. SR-20 and 57, F-016-2 (14) and F-032-1 (3), Jobs 5402-204, 5403-202, Jefferson Co.;
Fla.—**Brimson-Allen Constr. Co.**, Box 1455, Tampa, 1, Fla., CA, $719,243. limerock base with surf., b. conc. surf. course, wid'n. existing bridges 6.662 mi. SR 90, F-012-2 (5), Job 0304-203, Collier Co. Bids Oct. 11, awarded Nov. 7. CD 10/16, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Kansas City Bridge Co., 928 Broadway, Kansas City, Mo. LB $2,036,973. substructure for new bridge to replace existing Hathaway Bridge over West St. Andrews Bay near Panama City, consisting of two large piers adjacent to the channel, 12 smaller piers and 21 pile bents, F-017-2 (11), Job 4602-206, SR 30. Bay Co. Bids Nov. 8. CD 10/9.

BUILDINGS—LB & CA

▲ **Milcon Constr. Co.**, 1365 Debraqney St., New Orleans, La. Base Bid $26,823,000, with additive options $29,738,000, est. $33,300,000. (7 bidders) construct and finance HOUSING UNITS (Capehart), ENG-15-029-56-87, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Nov. 8. CD 9/18.

MIDDLE WEST

BUILDINGS—SLC

▲ **Ind., New Albany**—POWER PLANT—Public Service Co. of Indiana, Plainfield, soon lets contract, brick, steel super-structure electric power plant, near here, $4,000,000. Sargent & Lundy, 140 Dearborn St., Chicago, Ill., engrs. CD 11/9/55.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,
O.—**National Engineering & Contracting Co.**, 1968 W. Third St., Cleveland, O., CA, $1,765,790, est. $1,629,700, Type T-71 and structure 0.341 mi. USR 42R, Sect. 17.43, I-1057 (2), City of Cleveland, Cuyahoga Co.;
O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O. CA, $2,458,485, est. $2,816,200. Type T-71 and structures 3.061 mi. SR 4W, Sect. 7.81, I-$16 (7), City of Cincinnati, Village of Elmwood Place and Springfield Twp., Hamilton Co.;
O.—**Arthur S. Langenderfer, Inc.**, 4690 W. Bancroft St., Toledo, O., CA, $949,965, est. $996,600. Type T-50 on B-20 and T-70, 3.284 mi. CR 6, Village of Sylvania and Sylvania and Washington Twps., S-1209 (1), Lucas Co.;
O.—**The A. Bentley & Sons Co.**, 201 Belmont Ave., Toledo, O., CA, $3,325,000, est. $3,922,000, Type T-71 and structures 3.02 mi. USR 24-A, City of Toledo, Sect. 4.04, I-1052 (13), Lucas Co.;
O.—**The W. M. Brode Co.**, 100 Elizabeth St., Newcomerstown, O., CA, $244,986, est. $255,700. Type T-35 and structures, 1.113 mi. SR 212, Village of Bolivar and Lawrence Twp., Sects. (2.73-3.50), S-1203 (1), Tuscarawas Co.;
O.—**A. J. Baltes, Inc.**, 11 Olive St., Norwalk, O., CA, $798,238, est. $890,100, Type T-71 and structures 1.845 mi. SR 10, Carlisle and Eaton Twps., Sections (13.75-15.25), Lorain Co.;
O.—**Smith Constr. Co. of Ohio**, P. O. Box 515, Vienna, O. CA, $519,417, est. $532,000, Type T-35 and structures, 5.317 mi. SR 88, Sections (7.04-11.93), Bristol and Mecca Twps., Trumbull Co.;
O.—**Shelly & Sands, Inc.**, Thornville, O., CA, $1,214,766, est. $1,410,600, Type T-35, 10.936 mi. USR 50A, Marietta and Newport Twps., Sect. 29.60, SR 7, Sect. 40.23, Washington Co. Grand total $11,276,647. Bids Oct. 30. CD 11/9, under LB.

▲† **S. J. Groves & Sons Co.**, 500 Wesley Temple Bldg., Minneapolis, Minn., CA, $2,400,200. 2nd phase, widening and dredging Calumet Sag Channel, near Chicago, CIVENG-11-032-57-10, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Oct. 17. CD 11/5, under LB.

BUILDINGS—LB & CA

▲ **Meadowland Estates, Inc.**, 115 W. 5 Ave., Gary, Ind. Own Forces. $10,000,000. 500 HOMES, between 53 and 57 Ave., between Broadway and Harrison St., GARY, IND.

Samson & Diore, 18116 James Couzens Hy., Detroit, Mich. Owner Builds. $920,000. 55 brick ranch HOMES, Belanger and East Crestmont Sts., ROSEVILLE, MICH.

▲ **The Lundblad Co.**, 4070 W. Fort St., Detroit 9, Mich. Owner Builds. $1,250,000. Bradbury Park 50

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

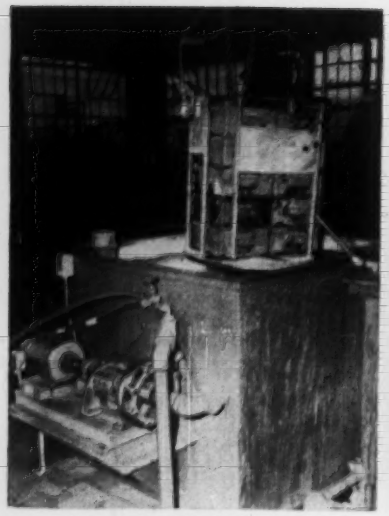
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

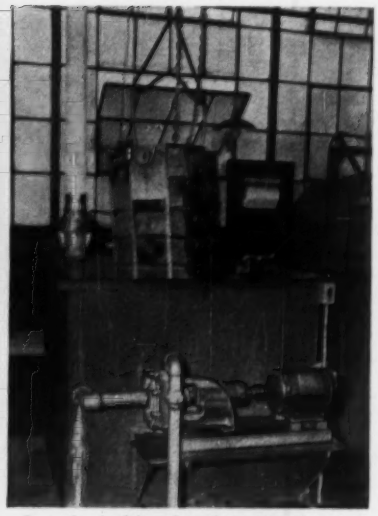
Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

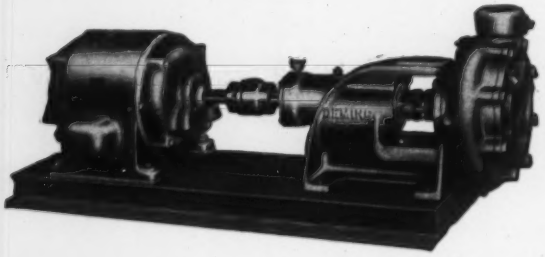
For additional reports see Construction Daily.



Deming Fig. 4011 Centrifugal Pump delivers 180° caustic solution at rate of 100 g.p.m. against 46-foot head for degreasing trays of hand tools.



Same load of hand tools is rinsed in wash water tank served by another Deming Fig. 4011 Centrifugal Pump at 100 g.p.m. against 46-foot head.



What's *Your* job for this Versatile Deming Pump?

Champion de Arment Tool Company, Meadville, Pa., has a dual job for two identical Deming Fig. 4011 End Suction Centrifugal Pumps. "CHANNELLOCK" pliers and other famous hand tools are manufactured by that company.

Degreasing and rinsing trays of these tools is the dual job serviced by the Deming Pumps, as illustrated in the above views. *What's YOUR job for this versatile Deming Pump?*

Optional features of Fig. 4011 make it readily and *economically* adaptable for handling a wide variety of liquids, including many corrosive materials.

Bulletin No. 4011-A gives all the facts. Ask for your free copy.

THE DEMING COMPANY • 536 BROADWAY, SALEM, OHIO

DEMING

INDUSTRIAL PUMPS

or more HOUSES, Carlton Dr. south of Nine Mile Rd., SOUTHFIELD, MICH.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Tex., Austin**—STATE OFFICE—BA 12/14—State of Texas, c/o State Bldg. com., Main Admin. Bldg., Austin, 10 story, 173,638 sq. ft. state office bldg. $3,000,000. Kuehne, Brooks & Barry, Perry-Brooks Bldg., Austin, Atlee B. & Robert M. Ayers, 342 W. Woodlawn St., San Antonio, Cato & Austin, 2401 LaBranch St., Houston, George L. Dahl, 2101 N. St. Paul St., Dallas, Stone & Pitts, 1872 Calder St., Beaumont and R. Max Brooks, Perry Brooks Bldg., Austin, archts. CD 12/1.

HEAVY CONSTRUCTION—LB & CA

State Bd. Control, Capitol Bldg., Austin, Tex., rejected bids Sept. 12, air-conditioning for State Capitol Bldg., AUSTIN, TEX. LB $930,222. CD 9/18, under LB.

▲† **Farnsworth & Chambers Co., Inc.,** 3018 Leeland St., Houston, Tex., CA, $19,400,000, academic complex except foundation caissons and steel, Air Force Academy, No. 05-613-57-3, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. Bids Oct. 23. CD 10/29, under LB.

BUILDINGS—LB & CA

▲† **Martin K. Eby Constr. Co., Inc.,** 610 N. Main St., Wichita, Kan. CA $4,795,979. 3 story ACADEMIC BLDG., DA-23-028-ENG-3060 (IFB 57-16), FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City, Mo. CD 10/26, under LB.

▲ **Refinery Engineering Co.,** Wright Bldg., Tulsa, Okla., CA Est. $4,000,000. 6,000 b/d NAPHTHA UNIFIER, DUNCAN, OKLA. Sunray Mid-Continent Oil Co., 907 S. Detroit St., Tulsa, Okla. CD 5/7.

▲ **Manhattan Constr. Co.,** Manhattan Bldg., Muskogee, Okla. CA Est. $2,500,000. 3 story 238,000 sq. ft. RETAIL STORE, 21st and Yale Sts., TULSA, OKLA. Sears Roebuck & Co., 1409 S. Lamar St., Dallas, Tex. Bids Oct. 16. CD 10/11.

▲ **Refinery Engineering Co.,** Wright Bldg., Tulsa, Okla. CA Est. $6,000,000. 20,000 b/d naphtha unifier, 12,000 b/d platformer with re-run column, 1,417 b/d LPG recovery unit, 2,453 b/d butane isomerization unit and 2,470 HF alkylation unit with debutanizer and re-run column at REFINERY, TULSA, OKLA. Sunray Mid-Continent Oil Co., 907 S. Detroit St., Tulsa, Okla. CD 5/7.

▲ **Tulsa Rig & Reel Co.,** Philtower Bldg., Tulsa, Okla. LB $1,429,200, est. $1,250,000. James Monroe JUNIOR HIGH SCHOOL, TULSA, OKLA. Bd. Educ., 410 S. Cincinnati, St., Tulsa, Okla. Bids Oct. 30. CD 10/9.

▲ **Bechtel Corp.,** 220 Bush St., San Francisco, Calif., design and construct, CA Est. $15,000,000, adding crude capacity; CA Est. $20,000,000, building TCE unit; CA Est. $5,000,000 sovaformer for Beaumont REFINERY, BEAUMONT, TEX. Grand total est. $54,495,000. Magnolia Petroleum Co. (Socony-Mobil), P.O. Box 900, Dallas 21, Tex. CD 2/10/56, 12/27/51, 6/27/52 and 1/19/50;
Foster-Wheeler Corp., 165 Broadway, New York 6, N. Y., design and construct, CA $7,500,000, sovafiner; CA $2,495,000, H_2S recovery unit (Beaumont, Tex.);
C. F. Braun, 1000 S. Fremont Ave., Alhambra, Calif., design and construct, CA $4,500,000, sulfuric alkylation unit (Beaumont, Tex.).

▲ **Owner c/o J. Ted Cottle,** 112 N. Stanton St., El Paso, Tex., cancelled bids, main SHOPPING CENTER, EL PASO, TEX. Est. $3,240,000. CD 11/7.

▲ **Linbeck Constr. Co.,** Box 13007, Houston, Tex., CA, $2,474,700, est. $2,600,000. SENIOR HIGH SCHOOL, Yates area, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Nov. 1. CD 11/8, under LB.

▲ **Ralph M. Parsons Co.,** 617 S. Olive St., Los Angeles 14, Calif. CA, 21,000 b/d ULTRAFORMER UNIT, TEXAS CITY, TEX. American Oil Co., Texas City, Tex. CD 8/21/56.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Calif.—**El Yeager,** P. O. Box 87, Riverside, Calif., LB $1,689,517 (4 bidders) grading, paving and 7 bridges 1.4 mi. freeway, San Bernardino Co.;
Calif.—**Griffith Co.,** 1060 S. Broadway, Los Angeles, Cal., LB $1,229,782 (4 bidders) grading, surf. 1.7 mi. freeway and Lake Murray Blvd. overcrossing, San Diego Co. Bids Nov. 8. CD 10/11.

▲ **CALIFORNIA**—State Div., Hys., 1120 N St., Sacramento,
Piombo Constr. Co., M & K Corp., and **Connolly-Pacific Co.,** P. O. Box 395, San Carlos, Calif., CA $5,103,614, grading, paving 3.8 mi. 6-lane divided hy. and 7 bridges Bayshore Freeway, San Mateo Co. Bids Oct. 24, awarded Nov. 5. CD 10/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
C. K. Moseman, 727 Barron Ave., Redwood City, Calif., LB $1,939,610, est $1,960,000 (6 bidders) concrete, steel girder bridge across Feather River, Sutter Co. Bids Nov. 7. CD 10/11.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
McCammon-Wunderlich Co. & Wunderlich Contg. Co., 2555 Pulgas Rd., Palo Alto, Calif., LB $3,601,981,

(Continued on page 64)

New warehouse has five 700′ long bays, each equipped with two overhead cranes and other modern steel handling facilities to process steel orders with efficiency and speed. Controlled humidity will provide extra protection for warehouse stock.

Junior Beams as roof purlins speed erection of ultra-modern A. M. Castle & Co. steel warehouse

Two hundred tons of 10″ lightweight J&L Junior Beams are used as roof purlins in the new $4,500,000 Franklin Park, Ill., warehouse of A. M. Castle & Co., nationally known steel distributor.

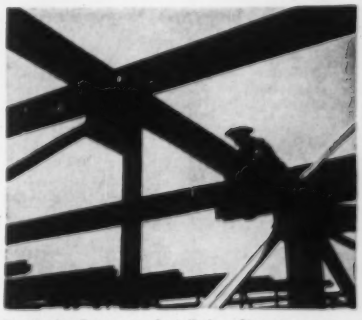
Erection is simple and fast. Junior Beams are cut to length and punched for bolts prior to arrival on the job. Their light weight makes them easy to raise and position. Connections are made with end plates and high tensile bolts.

This ultra-modern warehouse provides an outstanding example of one type of structure where J&L Junior Beams are employed to advantage. Other applications include almost every type of light occupancy buildings. Architects and builders use Junior Beams to develop functional, permanent, safe structures that are low in over-all costs.

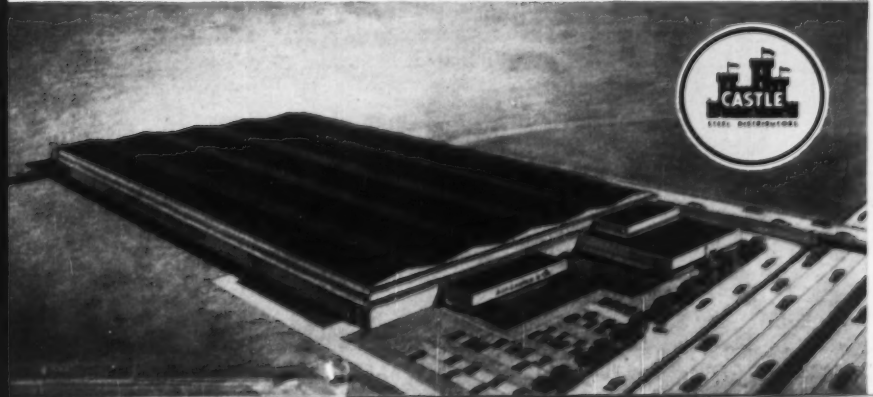
Find out more about them today. Write for a free copy of our technical literature on J&L Junior Beams.

J&L STEEL

Jones & Laughlin
STEEL CORPORATION · PITTSBURGH



The Junior Beams are installed on 8′ centers over 24′ spans. To save steel, 9 lb., 10″ Junior Beams are cantilevered beyond the main trusses.



Over 2,200 tons of structural steel, fabricated and erected by Allied Structural Steel Companies, are being used in this new $4,500,000 steel warehouse at 3400 North Wolf Road, Franklin Park, Illinois.

ARCHITECT AND BUILDER:
Clearing Industrial District, Inc.
Architect, J. S. Cromelin
FABRICATORS: Gage Division
Allied Structural Steel Companies
ERECTORS: Industrial Construction Co.
Division of Allied Structural Steel Companies

see our catalog in SWEET'S

(Continued from page 62)

est. $3,842,000 (9 bidders) 6.1 mi. 4-lane expressway highway 40 between Heather Glen near Applegate to Colfax, incl. 5 major structures, Placer Co. Bids Nov. 7. CD 10/11.

▲† **Pacific Bridge Co.**, 256 Montgomery St., San Francisco 4, Calif., CA, $1,388,500. Wharf No. 4, Naval Constr. Battalion Center, NBy-4185, PORT HUENEME, CALIF. Eleventh Naval Dist., 2220 Pacific Hy., San Diego, Calif. Bids Oct. 18. CD 10/24, under LB.

BUILDINGS—LB & CA

▲ **Rosendahl Corp.**, 100 Bush St., San Francisco, Calif., CA, $2,500,000. brass mfg. PLANT, NEWARK, CALIF. Titan Mfg. Co., Bellfonte, Pa., Garretson & Elmendorf, 417 Market St., San Francisco, Calif., engrs.

▲ **M & K Corp.**, 519 California St., San Francisco, Calif., LB $1,000,000. 1 story, 230,000 sq. ft., rein.-con. egg processing PLANT, SAN LEANDRO, CALIF. Poultry Producers of Central California, 840 Battery St., San Francisco, Calif. Bids Nov. 2. CD 10/31.

▲ **Hugh C. Jackson & Assocs.**, 494 University Ave., Palo Alto, Calif. Owner Builds, $1,000,000. 120-unit MOTEL, restaurants, 2 swimming pools, 2 banquet rooms, on Bayshore Blvd, SUNNYVALE, CALIF.

CANADA

BUILDINGS—BA

▲ **Man., Winnipeg**—OFFICE—BA 11/27—Huron & Erie Mortgage Corp., and Canada Trust Co., Lindsay Bldg., 228 Notre Dame Ave., reconstr. office, Portage Ave. and Fort St. $1,000,000. Moody & Moore, 295 Broadway Ave., archts. CD 1/11.

HEAVY CONSTRUCTION—LB & CA

▲ **S. McNally & Sons, Ltd.**, 1544 The Queensway, Toronto, Ont., LB $1,189,000. (6 bidders) Contract D-13-56, 10,731 ft. diam. 54- to 84-in. East Don River Interceptor Sewer; LB $1,091,000. (4 bidders) Contract D-19-56, 10,428 ft. 54-in. East Don Interceptor Sewer, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Nov. 5. CD 10/19.

▲ **Brush Aboe (Canada), Ltd.**, 296 Richmond St. W., Toronto, Ont., LB $1,026,646. (2 bidders) supplying, del. and installing gas engine blowers and auxiliaries Humber River Sewage Treatment Plant, north of Queensway west bank of Humber River, TORONTO, ONT. Municipality of Metropolitan, Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Oct. 29. CD 9/5.

▲ **Russell Constr., Ltd.**, Harbor Commissioners Bldg., Fleet St., West, Toronto, Ont., LB $7,280,575. (3 bidders) dredging in Welland Ship Canal from Guard Gate to Station 710 plus 00, Welland; QUEBEC and ONTARIO St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Nov. 6. CD 10/5;
Canadian Westinghouse Co., Ltd., 286 Sanford Ave. N., Hamilton, Ont., LB $145,997 supplying lighting standard and lighting units for lighting the locks and prisms of St. Lawrence Seaway. (Quebec and Ontario).

BUILDINGS—LB & CA

▲ **Redfern Constr. Co., Ltd.**, 36 Toronto St., Toronto, Ont., CA $2,000,000. OFFICE and PARKING GARAGE, 188 University Ave., TORONTO, ONT. Canadawide Investments, Ltd., 330 Bay St., Toronto, Ont. CD 7/10.

▲ **Eastern Constr. Co., Ltd.**, Box 96, Walkerville, Ont., CA Est. about $1,623,000. 4 story, bsmt., 62x83 ft., plus 28x48 ft. wing, rein.-con. steel, brick, CITY HALL, Civic Square, WINDSOR, ONT. City, City Hall, Windsor, Ont. Bids Oct. 26, awarded Oct. 30. CD 10/1.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Pacific-Alaska Contractors**, 1515 Center St., Tacoma, Wash. LB $370,427 (6 bidders) Schedules I and II Chester Creek and Airport Heights sewers, ANCHORAGE, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids Oct. 31;
Patti-MacDonald Constr. Co., Anchorage, Alaska, LB $835,073 (6 bidders), Schedules III, V and VI, Chester Creek and Airport Heights sewers (Anchorage, Alaska);
Stock & Grove, Inc., Anchorage, Alaska, LB $242,242 (6 bidders) Schedules IV and VII, Chester Creek and Airport Heights sewers (Anchorage, Alaska).

PROPOSED PROJECTS

WATER SUPPLY

▲ **Md., Baltimore**—City, Bureau Water Supply, 503 Municipal Bldg., voted bonds Nov. 6, water supply, incl. pipe line to Susquehanna River and enlarging, imprv. distr. sys. $45,000,000. CD 9/13.

▲ **Ont., Toronto**—The Municipality of Metropolitan Toronto, 67 Adelaide St. E., 36 inch water main from Runneymede Rd. and Colbeck St. to St. Alban's pumping station at Kipling Ave., $2,199,000, Gore & Storrie, Ltd., 1130 Bay St., consult. engrs.; 42 and 48 in. water main from Humberside Ave. and Indian Rd. Crescent to new reservoir site on Lawrence Ave. W., $1,000,000, James F. McLaren Assoc., 321 Bloor St. E., consult. engrs. CD 10/1.

SEWERS, WASTE DISPOSAL

▲ **Ill., Evanston**—City, City Hall, storm relief sewerage sys., west of Ridge Ave. from Main to Oakton St. $1,360,000. Alvord, Burdick & Howsen, 20 N. Wacker Dr., Chicago, consult. engrs.

▲ **Md., Baltimore**—City, Bureau Sewers, 312 Municipal Bldg., Zone 2 voted bonds Nov. 6, sewers. $5,000,000. CD 9/13.

▲ **N. Y., Bay Park**—Bd. Supervs. Nassau Co., Court House, Mineola, Bay Park, Sewage Treatment Plant expansion. $7,000,000. Greeley & Hansen, 220 S. State St., Chicago, Ill., consult. engrs.

▲ **O., Cincinnati**—City, City Hall, voted bonds Nov. 6, sewers, imprvs., various locations $2,500,000. CD 10/16.

▲ **O., Cincinnati**—Hamilton Co. and Cities of Cincinnati, St. Bernard, Norwood, Court House, St. Bernard, voted $565,000 bonds Nov. 6, Ross Run trunk sewer. Total est. $3,700,000. Al. LeFeber & Assoc., 2933 Woodburn Ave., Cincinnati, consult. engrs. C. A. Harrell, city engr. for Cincinnati; C. L. Hutchinson, engr. for Hamilton Co.; A. C. Schildmeyer, engr. for St. Bernard, Ray Achten, engr. for Norwood. CD 8/15.

▲ **O., Cleveland**—City, Dpt. P. Service, Louis L. Drasler, dir., City Hall, Zone 14, defeated bonds Nov. 6, incinerators, $2,000,000; Adache Eng. Co., Old Arcade, Zone 14, consult. engr.; voted bonds Nov. 6, sewers, $6,000,000. CD 7/2.

▲ **O., Euclid**—City, City Hall, 585 E. 222 St., Cleveland, Zone 23, voted bonds Nov. 6, sewage treatment plant. $4,800,000. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs. CD 7/3.

▲ **O., Parma** — City, City Hall, 6611 Ridge Rd., Zone 29, voted bonds Nov. 6, sewers. $5,000,000. Burt Chabek of Verne Clark Eng. Co., 4050 Brookpark Rd., Cleveland, Zone 29, consult. engrs. CD 7/23.

▲ **O., Sandusky**—City, City Hall, voted bonds Nov. 6, sewage treatment plant, intercepting sewers. $2,000,000. Jones, Henry & Williams, Security Bldg., Toledo, consult. engrs. CD 7/26.

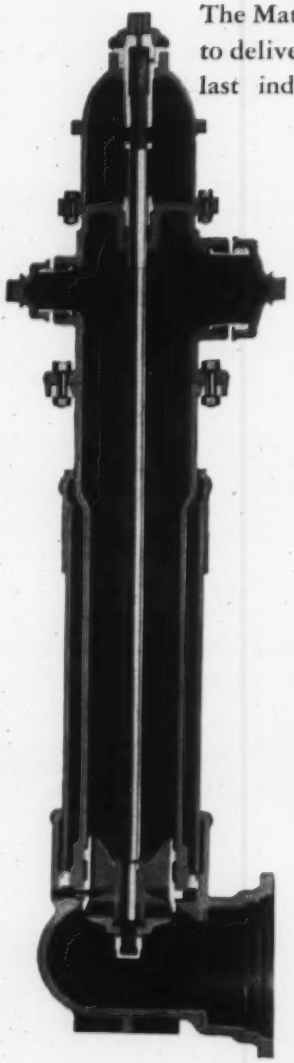
▲ **R. I., Providence**—City, City Hall, voted $1,400,000 bonds Nov. 6, altering sewage plant and sewerage const. CD 10/26.

BRIDGES

▲ **O., Cleveland**—City, City Hall, Zone 14, defeated bonds Nov. 6, bridges. $5,000,000. CD 7/2.

Reduce Wear, Save with Mathews

The Mathews Flange Barrel Hydrant is designed to deliver every available gallon of water and to last indefinitely with minimum maintenance.



CHECK THESE IMPORTANT FEATURES

The Flange Barrel

The swivel flange at the base of the nozzle section permits nozzles to be faced toward any point in the complete circle. Saves time on original installation and on replacements.

On broken hydrants, top cap and nozzle sections can usually be salvaged, thus reducing accident costs.

The Stuffing Box Plate

Cast integral with the nozzle section, the plate keeps water and sediment away from the operating thread. Hydrant remains operable in any weather. Wear on the operating thread is largely eliminated.

Made by

Available with mechanical joint pipe connections.

▲ **OREGON and WASHINGTON**—Oregon Hy. Comn., Salem, and Washington Hy. Comn., Olympia, Wash. bridge over Columbia River at its mouth from Astoria, Ore. to Megler, Wash. $34,000,000. New feasibility study to be made. CD 4/29/55.

STREETS AND ROADS

▲ **Calif., San Rafale**—Marin Co., Court House, voted $7,500,000 bonds Nov. 6, imprv. county roads. CD 4/16.

▲ **NEW YORK**—Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

Nassau Co.—4-lane highway to bypass Miracle Mile, from Northern Blvd. and East Shore Rd. and running northeast to rejoin Northern Blvd. at Manhasset Woods Rd., Manhasset. $5,000,000. To be finished in 1959. Now in study stage.

widen 1.5 mi. Northern State Parkway to 8-lanes from Northern end of Meadowbrook Parkway to new Long Island Expressway, $3,000,000. Bids in January 1957. CD 4/14/55.

▲ **O., Cincinnati**—City, City Hall, voted bonds Nov 6, expressway program, $15,500,000; street imprvs. various locations, $6,500,000. CD 10/16.

▲ **O., Cincinnati**—Comrs. Hamilton Co., Court House, voted bonds Nov. 6, road imprvs., various locations. $6,000,000. CD 10/16.

▲ **O., Cleveland**—City, City Hall, Zone 14, defeated bonds Nov. 6, opening, extending, widening and relocating limited access highways, $6,000,000; voted bonds Nov. 6, grading, paving, draining and resurf. streets, $5,000,000. CD 7/2.

▲ **O., Cleveland**—Comrs. Cuyahoga Co., Court House, voted $3,000,000 bonds Nov. 6, imprv. roads, to Warrensville site of Pan-American Games. Albert S. Porter, co. engr. CD 7/23.

▲ **O., Fairfax (Cincinnati)**—Village, voted $1,400,000 bonds Nov. 6, street and sewer imprvs. Larson-McKinney & Miller, 9th and Main Sts., Cincinnati, consult. engrs. CD 7/23.

▲ **Tex., Beaumont**—Jefferson Co., Court House, voted bonds Nov. 6, road work, paving, widening from Chambers county line to Neches River Bridge, $1,690,000 road work, paving, Hy. 347, Central Gardens to Hy. 87, Port Arthur, $2,150,000; Hy. 87, intracoastal canal to Neches River Bridge, $518,300; 4-lanes, Hy. 90 from 4 St. Beaumont to Liberty Co. line, $2,287,850. W. O. Bower, c/o owner, engr. CD 10/9.

EARTHWORK, WATERWAYS

▲ **Tex., Victoria**—Victoria Co. Navigation Dist., Court House, voted $3,500,000 bonds Oct. 30, exten. Guadalupe River Barge Canal. $11,000,000. CD 10/15.

Time and Money Flange Barrel Hydrant

Breakable Flange and Stem Coupling

Optional feature furnished at extra cost. Specially designed flange in the standpipe just above ground level and a frangible coupling in the hydrant stem are designed to snap when struck a blow heavy enough to break the hydrant. Both can be replaced quickly *and without excavating*, while hydrant head, standpipe and stem remain undamaged.

ADDITIONAL ADVANTAGES

Two-way heads can be replaced with steamer and two-way heads without shutting off water.

Shield operating nut assures protection for the revolving nut from sleet, snow or dust.

An extension piece may be inserted between hydrant head and barrel or between barrel and elbow.

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

AIRPORTS

▲ **Calif., San Francisco**—AIRPORT IMPRVS.—City, Dpt. P. Wks., City Hall, voted $25,000,000 bonds Nov. 6, San Francisco International Airport imprvs., incl. runways extens., helicopter facilities, addnl. concourses to handle passenger loading. CD 10/25.

▲ **Mich., Detroit**—AIRPORT IMPRVS.—Bd. Supervs. Wayne Co., City-County Airport, plans by Giffels & Vallet, Inc., L. Rossetti, 1000 Marquette Bldg., Detroit, Wayne County Airport imprvs. $10,721,228. Leroy C. Smith, co. hy. engr. and airport mgr. CD 3/15/55.

▲ **R. I., Smithfield**—AIRPORT—State of Rhode Island, State Office Bldg., Providence, voted $1,500,000 bonds Nov. 6, airport imprvs., runways, admin. bldg. CD 10/26.

LATIN AMERICA

▲ **Cuba, Havana**—HOTEL, etc.—Cuban Riviera Hotel Corp., Havana, plans by Polevitzky, Johnson & Assocs., 250 N. E. 18 St. S., Miami, Fla., U. S. A. 17 story 200x500 ft. Hotel "Havana Riviera", 100 ft. long swimming pool. $5,500,000. Saentz, Cancio Martin, Cuba, structural engr. R. L. Duffer & Assocs., 3356 Virginia St., Miami, Fla., U. S. A., mech. engr.

PUBLIC BUILDINGS

▲ **Calif., Fresno**—SCHOOL—Fresno Unified School Dist., 2348 Mariposa St., voted bonds Nov. 6 new elementary school and existing schools addn. $11,775,000.

▲ **Calif., Los Angeles**—GARAGES—Bd. Supervs. Los Angeles, Hall of Records, plans by Stanton, Stockwell, Williams, Wilson, Austin, Field & Try, 627 S. Carondolet St., 2 level parking garages on either side of mall, bounded by Court, Hope, and 1st Sts., and Grand Ave., Court, Hope and Temple Sts. and Grand Ave., Capitol Proj. 7071-7072. $1,944,800.

▲ **Calif., Los Angeles**—HOSPITAL—Los Angeles Co., Hall of Records, voted $15,400,000 bonds Nov. 6 replacing county's Harbor Hospital, Torrance. CD 8/27.

▲ **Calif., Los Angeles**—JUVENILE DETENTION—Los Angeles Co., Hall of Records, voted $15,485,000 bonds Nov. 6, juvenile detention and placement facilities. CD 8/24.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S San Pedro St., plans by Smith, Powell & Morgridge, 208 W. 8 St., Milikan Junior High School, San Fernando, $2,000,000. CD 4/8/55.

▲ **Calif., Redding**—SCHOOLS—Shasta Union High & College School Districts, Redding, voted bonds, schools, $3,000,000. CD 10/3.

▲ **Calif., Redwood City**—SCHOOL—Sequoia Union High School Dist., Broadway and El Camino Real, Redwood City, plans by Peter Kump & Ernest Kump Assoc., 530 Santa Cruz Ave., Menlo Park, Woodside-Alameda High School. $1,790,000. CD 6/2/48.

▲ **Calif., San Bernardino**—COURTHOUSE—San Bernardino Co., County Courthouse, plans by Stiles & Robert Clements, 210 W. 7th St., Los Angeles, courthouse addn. $1,720,000. CD 3/18/46.

▲ **Calif., San Diego**—CONVENTION HALL—City, Civic Center, San Diego, defeated $8,500,000 bonds Nov. 6, convention hall. CD 9/12.

▲ **Calif., San Diego**—SCHOOLS—San Diego Unified School Dist., 825 Union Ave., voted $27,000,000 bonds Nov. 6, primary and secondary school and junior college construction. CD 8/21.

▲ **Calif., San Francisco**—SCHOOLS—Dpt. P. Wks., City Hall, voted $27,000,000 bonds, Nov. 6, new high schools, 3 new elementary schools, existing schools addns., incl. San Francisco City College buildings CD 10/25.

▲ **Calif, San Rafael**—SCHOOL—San Rafael High School, 215 Mission St. voted bonds Nov 6, school near Terra Linda, $2,350,000. CD 10/22.

▲ **Calif., Stockton**—COURT HOUSE—San Joaquin Co., Court House, defeated binds Nov. 6, 5 story, 295,000 sq. ft., rein.-con. court house, $6,400,000. CD 9/26.

▲ **Colo., Colorado Springs**—SCHOOLS—School District No. 11, Colorado Springs, bond election Dec. 11, Senior High School, Junior High School, and 3 elementary schools, also West Junior High School addn. $6,900,000.

▲ **Conn., Milford**—SCHOOL—Town, Town Hall, West High School, Lansdale Ave. $1,400,000. Frederick P. Clark Assocs., 41 Theodore Fremd Ave., Rye, N. Y., consult. engrs. CD 10/30.

▲ **Conn., Stratford**—SCHOOL—Town, Town Hall, Junior High School, Chapel St. $1,500,000.

▲ **Fla., Miami**—HOSPITAL EXPANSION—Comrs. Dade Co., Court House, voted $7,500,000 bonds Nov. 6, Jackson Memorial Hospital expansion program. CD 9/18.

Ga., Decatur—SCHOOLS—DeKalb Co. School Dist., Court House, voted $11,000,000 bonds Oct. 30, new schools and school addns. CD 10/23.

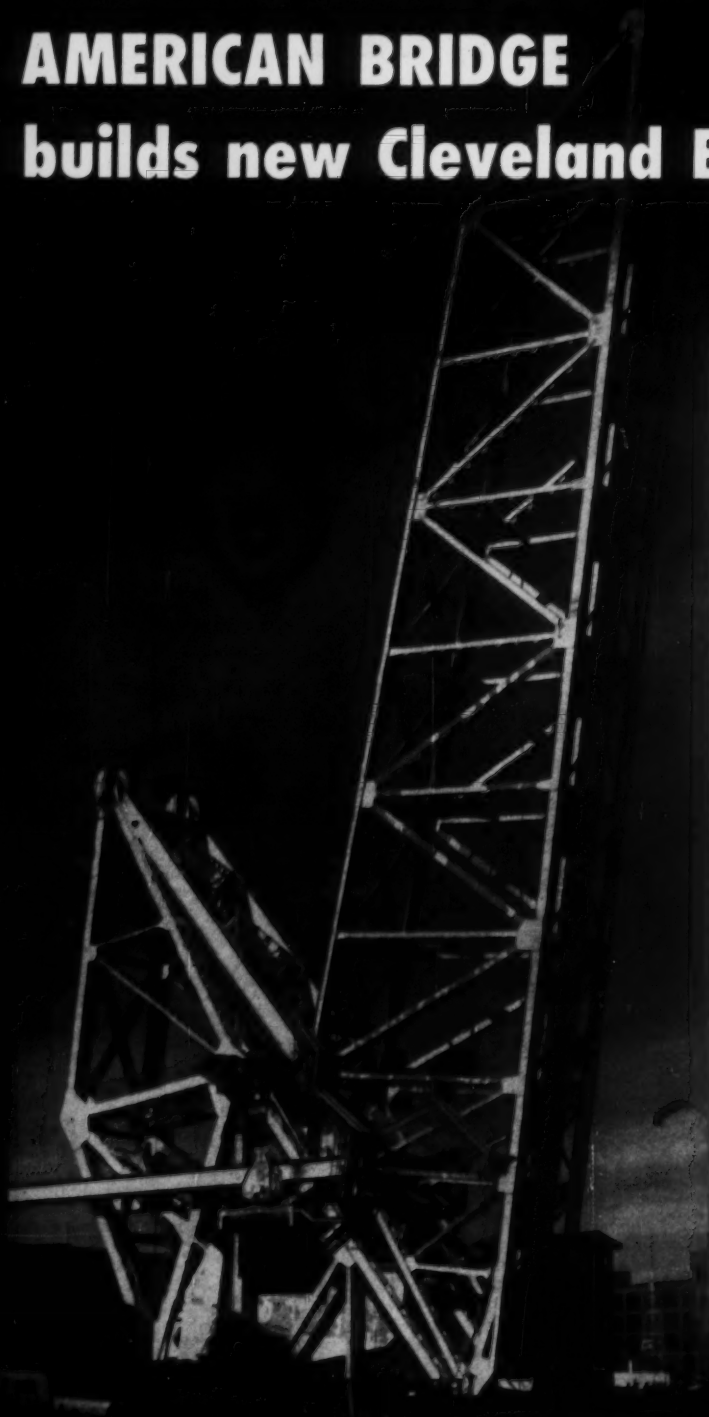
▲ **Idaho, Boise**—AUDITORIUM—Ada Co., County Court House, defeated $1,900,000 bonds Nov. 6, public auditorium. CD 10/11.

▲ **Ill., Chicago**—PARKING GARAGE—Chicago Park Dist., 425 E. 14 St., parking garage, Oak St. bend of Lake Shore Dr., $2,413,000. Ralph Burke, Inc., 20 N. Wacker Dr., consult. engr.

▲ **Ill., Elmhurst**—HIGH SCHOOL—York Community High School Dist. 88, 355 W. St. Charles St., Elmhurst, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., high school, S. Ardmore Ave.

(Continued on page 67)

AMERICAN BRIDGE builds new Cleveland Bridge for B&O



This new B & O Railroad bridge, recently installed over the Cuyahoga River, in Cleveland, replaces the original bridge built in 1911. Designed by Hardesty & Hanover, Consulting Engineers, New York, N. Y., the bridge consists of one single-track, single-leaf heel trunnion thru-truss bascule span, 255 feet long; one single-track thru-truss tower span for the West approach, 55 feet long; and one single-track deck plate girder span for the East approach, 63 feet long.

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(Continued on page 65)

near Villa Park. $9,500,000. CD 6/5/52 under Ill., Villa Park.

▲ **Ind., New Castle**—SCHOOL—City, City Hall, plans by Boyd E. Phelps, Inc., 1000 Washington St., Michigan City. Walter P. Chrysler Memorial High School. $3,000,000. Bids about Jan. 15.

▲ **Md., Baltimore**—CIVIC CENTER SPORTS ARENA—City, Bureau Bldg. Constr. 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 for civic center sports arena, $6,000,000. CD 9/13.

▲ **Md., Baltimore**—SCHOOLS—City, Bureau Bldg. Constr. 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 schools. $29,500,000. CD 9/13.

▲ **Md., Silver Spring** — HOSPITAL — Montgomery Co. Council, Silver Spring Hospital Assoc., Rockville, defeated $3,000,000 bonds Nov. 6, hospital. CD 8/30.

▲ **Neb., Scottsbluff**—POWER PLANT—City, City Hall, defeated $1,300,000 bonds Nov. 6, power plant and distr. CD 10/1.

▲ **N. J., Bernardsville**—SCHOOL—Bd. Educ., Olcott School, Bernardsville Boro, grammar school, Old Polo Grounds, Mendham Rd. $1,500,000.

▲ **N. J., Newark**—GARAGE, etc.—City Parking Auth., City Hall, parking garage, etc. $2,000,000-$3,000,000. Ramp Building Corp., 230 Park Ave., New York, N. Y., consult. engrs. CD 10/30.

▲ **N. J., Rutherford**—SCHOOL—Bd. Educ., Borough of Rutherford, plans by Micklewright & Mountford, E. Stuyvesant Ave. at Prospect St., Trenton, Junior High School. $1,342,000. Bids in May.

▲ **N. J., Williamstown**—SCHOOL—Monroe Twp. Bd. Educ., Williamstown, plans by Harold M. Klaisz, Woodbury, 1 and 2 story brick block steel, concrete, 28 classroom, Senior High School, $1,500,000. CD 2/6.

▲ **O., Akron** — JUVENILE DETENTION BUREAU — Comrs. Summit Co., Court House, voted $1,500,000 bonds Nov. 6, Juvenile Detention Bureau. CD 7/19.

▲ **O., Berea**—SCHOOL—Berea School Bd., Berea, voted $3,000,000 capital improvement levy Nov. 6 for 5 year to provide approx. $350,000 per year for 1 school each year. $1,750,000. CD 8/20.

▲ **O., Cambridge** — SCHOOL — Bd. Educ., Cambridge, voted bonds Nov. 6, school expansion program. $1,365,000. CD 9/25.

▲ **O., Cincinnati**—SCHOOL—Oak Hill School Dist., 3900 Race Rd., voted bonds Nov. 6, high school $2,750,000. George Schatz & Assoc., 309 Ludlow Ave., archts. CD 7/20.

▲ **O., Cincinnati** — UNIVERSITY IMPRVS. — City, City Hall, voted bonds Nov. 6, University of Cincinnati imprvs. $1,600,000. CD 10/16.

▲ **O., Cleveland**—MUNICIPAL COURT—City, City Hall, Zone 14, defeated bonds Nov. 6, municipal court bldg. $2,700,000. Anthony Gattozzi, city archt. CD 7/2.

▲ **O., Elyria** — COUNTY — Comrs. Lorain Co., Court House, voted $3,000,000 bonds Nov. 6, county bldg. Don E. Patterson, co. engr. CD 5/31.

▲ **O., Ironton**—SCHOOLS—Bd. Educ., Ironton, voted $2,200,000 bonds Nov. 6, schools. CD 10/30.

▲ **O., Lakewood**—MUNICIPAL—City, 14532 Lake Ave., Zone 7, defeated bonds Nov. 6, municipal bldg. $1,500,000. Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, Zone 14, archts. CD 7/2.

▲ **O., Parma**—SCHOOLS—Bd. Educ., 5401 W. 54 St., Zone 29, voted bonds Nov. 6, schools. $3,200,000. CD 7/2.

▲ **O., Sidney**—HIGH SCHOOL—Bd. Educ., Sidney, voted bonds Nov. 6, high school, west of Shelby Co. Fairgrounds $2,000,000. CD 6/27.

▲ **O., Wapakoneta**—HIGH SCHOOL—Bd. Educ., Wapakoneta, voted $1,300,000 bonds Nov. 6, high school. $1,600,000. Sullivan-Isaacs-Sullivan & Assoc., 1800 Reading Rd., Reading, archts.-consult. engrs. CD 7/9.

▲ **O., Washington Court House**—HIGH SCHOOL—Bd. Educ. Miami Trade School Dist., Washington Court House, voted bonds Nov. 6, high school, corner Rte 70 and Bloomingburg-New Holland Pike. $1,652,500. CD 6/27.

▲ **O., Youngstown**—SCHOOLS—Bd. Educ., Youngstown, voted bonds Nov. 6, schools, $5,460,000. CD 6/27.

▲ **Pa., Glenshaw**—SCHOOL—School Dist. of Shaler twp., plans by Trefry Eng. Co., Box 736 Rd. 4, Butler; 1 story, brick, block Junior High School, Scott Rd. Shaler Twp. $1,250,000.

▲ **Pa., Schwenksville** — SCHOOLS — Schwenksville Area Joint School Auth., plans by John S. Carver, 2112 Spruce St., Phila., new Junior-Senior High School, and alterations to high school, $1,000,000; elementary school, $344,000.

▲ **R. I., Exeter**—SCHOOL—State of Rhode Island, State Office Bldg., Providence, voted $1,750,000 bonds Nov. 6, Exeter School for Mentally Retarded Children. CD 10/26.

▲ **R. I., Kingston**—BUILDING—State of Rhode Island, State Office Bldg., Providence, voted $5,000,000 bonds Nov. 6, buildings and roads, University of R. I. CD 10/26.

▲ **R. I., Providence**—CAMPUS—State of Rhode Island, State Office Bldg., Providence, voted $1,600,000 bonds Nov. 6, campus for State College of Education. CD 10/26.

▲ **R. I., Providence**—SCHOOL—City, City Hall, voted $1,250,000 bonds Nov. 6, elementary school and $1,000,000 for altering schools. CD 10/26.

▲ **Tex., Odessa**—HIGH SCHOOL—Ector County Independent School Dist., Odessa, plans by Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, high

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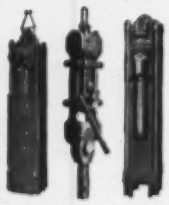

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school. $1,300,000. CD 12/8/55, under Odessa Independent School Dist., as owner.

▲ **Wash., Seattle**—CONCERT, etc.—City, County-City Bldg., Zone 4, voted bonds Nov. 6, 3,500 seat concert and convention hall, and 800-seat multi-purpose bldg. for civic center. $7,500,000. CD 7/20.

▲ **Wash., Seattle**—SCHOOLS—School Dist. No. 1, 815 4 Ave. N., Seattle, voted $25,000,000 bonds Nov. 6, Ballard, Franklin and Lincoln High Schools addns., $1,000,000 each; 3 Junior High Schools at Olympic Gulf course in Southeast Seattle and at Bitter Lake, $2,500,000 each; Woodrow Wilson Junior High School addn. $750,000; Roxhill Elementary School $700,000; 5 elementary schools at Rainier View, Sand Point, Victory Heights, Schmitz Park and Cedar Park $625,000 each; 2 elementary schools at West Broadview and North View Ridge, $600,000 each; Harrison, Pinehurst, Arbor Heights and Whitworth Schools addns., $400,000 each. CD 9/6.

COMMERCIAL BUILDINGS

▲ **Fla., Coral Gables**—HOTEL—Douglas Development Co., Collins Hay, vice pres., E. Ponce De Leon Blvd., hotel, 2 8-story bldgs., 145 rooms, 70 apartments, Douglas Rd. entrance to Coral Gables, $3,500,000.

▲ **Ill., Springfield**—YMCA BLDG.—Young Men's Christian Assn., 317 S. 7 St., plans by M. D. Turley, 526, South 7th St., YMCA bldg. $1,750,000. CD 2/7/55.

▲ **N. J., Pennsauken**—SHOPPING CENTER—American Shopping Centers, Inc., 1801 Nicollet Ave., Minneapolis, Minn., 1 story, 400,000 sq. ft., brick, concrete, block shopping center $5,000,000.

▲ **N. J., Secaucus**—OFFICES, etc.—Lerner Shops, 354 Fourth Ave., New York, N. Y., 400,000 sq. ft executive offices and central warehouse, County Ave. Exit 17 on N. J. Turnpike 17-acre tract, $1,500,000.

▲ **N. Y., Brooklyn**—GERIATRICS CENTER—Brooklyn Hebrew Home & Hospital for Aged, 813 Howard Ave., plans by Charles B. Meyers Assocs., 31 Union Square, New York, 6 story geriatrics center, Grafton St., Dumont and Livonia Aves. $3,000,000.

▲ **Pa., Essington**—OFFICE, etc.—Scott Paper Co., Front and Market Sts., Chester, plans by Welton Becket & Assoc., 5627 Wilshire Blvd., Los Angeles, Calif., office and administration bldg. $4,500,000. CD 8/14.

▲ **Pa., Phila.**—RADVIN INSTITUTE—University of Penn. Corp., 209 S. 36 St., plans by Schmidt Gorden & Erikson, 104 S. Michigan Ave., Chicago, Ill., Dr. I. S. Radvin Institute, $3,500,000. CD 10/21/54.

▲ **Tex., Beeville**—HOUSING—Officer in Charge of Constr., 8th Naval Dist., Bldg. 16, Naval Station, New Orleans, La., plans by Milam & Roper, 368 Casa Linda Plaza, Dallas, construct and finance, 225 housing units, Chase Naval Air tation. $3,250,000. Reaves & Gregory, 332 W. 7th St., Fort Worth, consult. engrs. CD 10/3, under Beeville Housing Auth., Beeville, Tex., as owner.

▲ **Tex., Dallas**—OFFICES—Southland Life Insurance Co., Southland Life Bldg., plans by Welton Becket & Assocs., archts.-consult. engrs., 5657 Wilshire Blvd., Los Angeles, Calif. and Mark Lemmon, Thomas Bldg., 2 office towers bldg., 20 and 25 stories each, incl underground parking garage 225,000 sq. ft., 175,000 sq. ft. retail store and shop, $5,000,000; 42 story home office, $12,000,000. CD 1/18/54.

▲ **Tex., San Antonio**—SHOPPING CENTER—Terrell Plaza, c/o Marmon-Mok, 612 S. Texas Bldg., and Jerry Rogers, 2002 N. St. Mary St., archts., project abandoned, site sold, shopping center, $1,500,000. CD 6/12.

INDUSTRIAL BUILDINGS

▲ **Calif., Wilmington**—PLANT—Union Oil Co., 617 W 7 St., Los Angeles, plant to manufacture 100 million lbs. ethylene per year. $20,000,000. To be completed in 1958.

▲ **Conn., New Haven**—TERMINAL—Adley Express Co., Inc., 216 Crown St., plans by Leo F. Caproni, 132 Temple St., 1 story, 120,000 sq. ft. motor freight terminal, $1,500,000. CD 9/19/50.

▲ **Conn., Stratford**—LABORATORY, etc.—Sikorsky Aircraft Div., United Aircraft Corp., N. Main St., 433,200 sq. ft. plant addn. for engineering and service personnel, laboratory, etc. $4,000,000.

▲ **Ill., Waukegan**—PLANT—National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y., gypsum bldg. projects plant, docks and harbor imprvs. $6,000,000.

UNCLASSIFIED

▲ **Md., Baltimore**—OFF STREET PARKING FACILITIES—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 off street parking facilities. $5,000,000. CD 9/17.

▲ **O., Cleveland**—IMPROVEMENTS—City, City Hall, Zone 14, voted bonds Nov. 6, improvements needed for Pan-American games. $1,500,000. CD 7/24.

▲ **O., Parma**—PARK IMPRVS.—City, City Hall, 6611 Ridge Rd., Cleveland, Zone 29, voted bonds Nov. 6, park imprvs. $1,500,000. CD 10/16.

▲ **Tex., Houston**—STADIUM, etc.—Houston Ind. School Dist., 1300 Capitol St., plans by Milton McGinty, 2425 Ralph St., 17,000 seating capacity stadium and field house. $1,750,000. CD 5/22.

▲ **Wash., Tacoma**—WATERWAYS—Port of Tacoma, Portacoma Rd., voted bonds Nov. 6, dredging and completion of Hylebos waterway, dredging on pioneer channel in Port Industrial waterway and development of facilities on Sitcum waterway. $5,400,000. CD 9/20.

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BUILDINGS—BA

▲ **Mass., Dedham**—MANUFACTURING—BA 11/29—Allied Container Corp., 1715 Hyde Park Ave., Hyde Park, mfg. bldg., off Rte. 128. $2,000,000. Plans deposit $100, refundable. Sumner Schein, 271 Huntington Ave., Boston, archt.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Bayer & Mingolla Constr. Co., Inc., 550 Park Ave., Worcester, Mass. LB **$1,760,300.** hy. and bridge at Chelmsford-Lowell, Rte. 3, Proj. F 315 (8). Bids Nov. 14. CD 10/30.

▲† **The Arundel Corp.**, Pier 3, foot of Fulton St., Brooklyn, N. Y. LB **$1,710,000**, est. $1,380,000. impry. dredging Fall River Harbor, Fall River, CIVENG-19-016-57-29, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Nov. 9. CD 10/24.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 6 New York — December 7 Pennsylvania

STREETS AND ROADS

December 6 New York — December 7 Pennsylvania

▲ **Pa., Phila.**—BA 11/29—U. S. Eng., 2635 Abbottsford Rd., Phila., storm drainage, sys., pumping station, Frankford Arsenal, ENG-36-109-57-12, $3,000,000, Harris Dechant Associates, 123 S. Broad St., engrs. CD 7/27.

BUILDINGS—BA

▲ **N. Y., New York**—SCHOOL—BA 12/5—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, P. S. 123, Edgecombe to 8th Aves., West 140 to W. 141 Sts., Manhattan Boro, $3,093,950. Plans deposit $25 general constr., $10 each for plumbing and drainage, heating and ventilating, electrical work and lighting fixtures.

▲ **N. Y., New York**—SCHOOL—BA 12/11—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, J. H. S. 142, Baychester Ave., E. 233 St., The Bronx, $4,219,100. Plans deposit $25 general constr., $10 each for plumbing and drainage, heating and ventilating, electric work and lighting fixtures. CD 1/20/55.

▲† **N. J., Fort Dix**—HOSPITAL—BA 12/19—U. S. Eng., 2635 Abbottsford Rd., Phila. 29, Pa., 500-bed hospital, $7,500,000.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—John W. Johnson, supt. Pub. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany,
Poirier & McLane Corp., 33 West 42nd St., New York 18, N. Y., LB **$3,484,167**, Est. $3,602,000 (3 bidders) constr. 16-span, 1,262 ft. long Byram River interstate Bridge and its approaches connecting the State Thruway's 15 mi. New England Sect. with Connecticut Turnpike now under constr., bridge will carry six travel lanes, involving 0.39 mi., Westchester Co. (and Fairfield Co., Conn.). Bids Nov. 15. CD 10/19.

▲ **NEW YORK**—John W. Johnson, supt., P. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany, No bids received 11/15/56, est. **$3,742,000** constr. 1.41 mi. six-lane divided portion of State Thruway's Niagara Section from Rossler St. near the Triple Interchange on outskirts of Buffalo, westward to Clinton St. in Buffalo, incl. will be the constr. 2.27 mi. of access roads and building of three structures, Erie Co.

N. Y.—**Union Building and Construction Corp.**, Passaic, N. J., LB **$8,022,299**, est. $8,030,000 (1 bidder) constr. 4.57 mi. four-lane divided segment of State Thruway's Niagara Section from Ontario St. in Buffalo northwestward to South Grand Island Bridge, incl. constr. 5.53 mi. of access roads, eight structures, Erie Co.

N. Y.—**Lane Construction Corp.**, 965 East Main St., Meriden, Conn., LB **$2,435,440**, est. $2,674,000. (6 bidders) constr. 2.3 mi. four-lane divided sect. of Rochester's Eastern Thruway Connection, starting at Fairport Rd. and exten. northwestward to Landing Rd. generally following the alignment of abandoned Rochester, Syracuse and Eastern trolley line, incl. constr. of 3.57 mi. of access roads, traffic interchange facilities leading to East Rochester, Monroe Co.

N. Y.—**Tully & DiNapoli, Inc.**, 125-50 Northern Blvd., P. O. Box 145, Flushing, N. Y., LB **$6,555,125**, est. $6,981,000 (4 bidders) constr. 0.86 mi. six-lane divided sect. of Horace Harding Expressway (Rte. 25D) and 3.03 mi. of access roads from Grand Central Parkway to 136 St. incl. 3 bridges and one pedestrian overpass, Queens Co.

N. Y.—**Hudson River Construction Co., Inc.**, 75 State St., Albany, N. Y., LB **$1,249,379**, est. $1,351,000 (3 bidders) wid'n., strengthening 4.03 mi. sect. of Rte. 9 and 20, starting just southeast of Rte. 4 and 40 intersection northwest of East Greenbush and exten. southeastward through East Greenbush and Schodack Center to Rices Corners, then south on Rte. 9 for about ½ mi. existing 27 and 36 ft. wide road will be widened to a minimum of 46 ft. width and resurf. with b. conc., Rensselaer Co.

N. Y.—**Twin Village Construction Corp.**, 166 Gould Ave., Depew, N. Y., LB **$306,270**, est. $315,000 (4 bidders) resurf. with b. conc. of County Rd. 7, 26 and 60 starting in village of Frewsburg and exten. northeastward for 2.46 mi., Chautauqua Co. Bids Nov. 15. CD 10/19.

▲ **McKiernan-Terry Corp.**, 313 Manor Ave., Harrison, N. J. LB **$2,253,100.** (3 bidders) Contr. 2974, modernization of bridges of slips Nos. 1, 2 and 3, Whitehall Street Ferry Terminal, Manhattan Boro, NEW YORK, N. Y. Comr., Marine & Aviation, Pier 1, North River 4, N. Y. Bids Nov. 9. CD 10/31.

BUILDINGS—LB & CA

▲ **Christensen & Nielsen**, 422 Liberty St., Schenectady, N. Y. CA **$1,645,736.** Central SCHOOL and BUS GARAGE, CORINTH, N. Y. Bd. Educ., Corinth Central School Dist., Corinth, N. Y. CD 11/12, under LB.

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York 17, N. Y. CA **$2,775,000.** SENIOR HIGH SCHOOL, McKay Ave. and Oakwood Rd., HUNTINGTON, N. Y. Bd. Educ., Union Free School Dist. 3, town of Huntington, Huntington, N. Y. CD 10/1, under LB.

▲ **Streeter Associates, Inc.**, East Woodlawn Ave., Elmira, N. Y. CA **$2,908,670.** OFFICE, ITHACA, N. Y. National Cash Register Co., S. Main and K Sts., Dayton, O. Bids Oct. 18. CD 10/15.

▲ **Caristo Constr. Co.**, 26 Court St., Brooklyn 2, N. Y. LB **$3,050,000.** (7 bidders) general constr. JUNIOR HIGH SCHOOL, 13, Fifth Ave., 106 and 107 Sts., Manhattan, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. Frederick G. Frost Jr. & Assoc., 144 E. 30 St., New York, N. Y., archts.

▲ **St. James Estates Homes**, c/o Donald G. Patrick, archt., 11 Cannon Court, Huntington, N. Y. Owner Builds. **$2,400,000.** 200 HOUSES on tract at Moriches Rd. south of Rte. 25A, ST. JAMES, N. Y.

▲ **Strausman Constr. Co.**, 25 Great Neck Rd., Great Neck, N. Y., Separate Contracts. **$9,600,000.** RESIDENTIAL DEVELOPMENT, BURLINGTON, N. J.

▲ **Princeton Country Estates**, 470 Georges Rd., New Brunswick, N. J., Separate Contracts. **$5,670,000.** 189- unit RESIDENTIAL DEVELOPMENT, also roads, water and sewer lines, PRINCETON, N. J.

▲ **Philip S. Seltzer**, Western Savings Fund Bldg., Phila., Pa. Separate Contracts. **$3,000,000.** RESIDENTIAL DEVELOPMENT, Limekiln Pike, FORT WASHINGTON, PA.

▲ **Koppers Eng. & Constr. Div., Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa. CA PLANT to produce "Dylite" expandable polystyrene beads, KOBUTA, PA. Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa. CD 3/19/51.

San Francisco overpass has center span of 35 feet and outer spans of 30 feet. Width is 32 feet. Deck is laminated 2x12's on edge, supported by 6 equally spaced glulam girders. Engineering by J. Y. Long Company, Oakland, California. Contractor: Utah Construction Company of South San Francisco. Lamination, fabrication and erection by Timber Structures, Inc.

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▲ **Marilyn Park, Inc.**, c/o F. Joseph Croolick, 1411 City Line Ave., Phila., Pa. Separate Contracts. $1,860,000. RESIDENTIAL DEVELOPMENT, Lawrence Rd., MANOA, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **J. D. Hedin Constr. Co.**, 2900 Newton St. N. E., Wash., D. C. LB $3,158,000. (6 bidders) North Hagerstown HIGH SCHOOL, HAGERSTOWN, MD. Washington Co. Bd. Educ., Court House, Hagerstown, Md. Bids Nov. 13. CD 11/5.

SOUTH

BUILDINGS—BA

▲ **Ga., Atlanta**—COMMUNICABLE DISEASE CENTER—BA 12/20—General Services Admin. P Bldg. Serv., Regional Office, 50 Seventh St. N.E., Atlanta, Ga., lease-purchase project, communicable disease center. $12,300,000. CD 10/31, under LB, Public Buildings.

▲ **W. Va., Huntington**—OFFICE—BA 12/20—General Services Admin., P. Bldg. Serv., General Services Bldg., Wash. 25, D. C., lease-purchase project, federal office bldg. $2,979,000. Extended date. S. E. Silling & Assocs., 314 Masonic Temple Bldg., Charleston, W. Va., archts. CD 10/8, under Public Buildings.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—The Richmond-Petersburg Turnpike Auth., 1015 E. Main St., Richmond, Zone 2.
Villa Contg. Co., Inc., 233 North Avenue, Westfield, N. J. CA $2,447,634, Contr. C-1-G, Sect. C, grading, drainage, paving and structures from point 1,800 ft. north of Rte. 10 to point 3,900 ft. north of Rte. 656, Chesterfield Co. Bids Oct. 30. CD 11/1, under LB.

BUILDINGS—LB & CA

▲ **Foster & Creighton Constr. Co.**, Box 2366, Knoxville, Tenn., CA $2,000,000. MFG. PLANT addn., WAREHOUSE, OFFICE and MFG. facilities, KNOXVILLE, TENN. Foote Mineral Corp., Proctor and Lorraine Sts., Knoxville, Tenn., and 18 W. Chelten Ave., Phila., Pa. James T. Mitchell, 7164½ Gay St., Knoxville, Tenn., archt. Patchen & Zimmerman, 525 Telfair St., Augusta, Ga., engrs. Bids Oct. 25. CD 10/4.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 27 Ohio

▲ **O., Columbus**—TERMINAL BLDG.—BA 12/11—City, City Hall, terminal bldg., Port Columbus Airport. $3,000,000. Extended date. CD 10/9.

▲ **O., Warren**—BA 12/12—Comrs. Trumbull Co., Court House, water sys. to serve Hubbard and Liberty Twps., incl. 1 m. g. storage tank and two 500,000 gal. standpipes. $2,750,000. Snyder, McLellan, Welsh & Weinberg, Hillsboro, Ind., engrs. CD 8/12/55.

BUILDINGS—LB & CA

▲ **Wilputte Coke Oven Div., Allied Chemical & Dye Corp.**, 61 Broadway, New York, N. Y. CA Est. $9,000,000. 76 oven byproducts COKE BATTERY at Campbell Works, CAMPBELL, O. Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O. Awarded Nov. 7. CD 11/29/54.

▲ **Leo W. Schmidt Co.**, 9920 Granger Rd., Cleveland, O., CA, excavation and foundation work for STORE at Southgate Shopping Center, CLEVELAND, O. Total est. $5,000,000. Wm. Taylor & Son Co., 630 Euclid Ave., Cleveland 14, O. CD 5/10.

▲ **The H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland 0. CA $12,000,000. design and construct 300,000 sq. ft. DRILL MFG. PLANT, RICHMOND, IND. Bucyrus-Erie Co., 1100 Milwaukee Ave., Milwaukee, Wis. CD 11/15.

▲ **Rose Hill Builders**, 13324 W. Seven Mile Rd., Detroit 35, Mich. CA Est. $12,500,000. Westbrook Gardens, 875 brick HOMES, Ann Arbor Trail, west of Merriman Rd., DEARBORN, MICH. Rose-Hill Realty, 17300 Grand River, Detroit 27, Mich.

▲ **Cambridge Constr. Co.**, 22022 Woodward Ave., Ferndale, Mich. and **Paul R. Lowell**, 302 Gardenia St., Royal Oak, Mich. CA Est. $2,700,000. Golf View Estates Development, 95 HOMES, Lake Angelus, Wormer Lake and Mohawk, PONTIAC, MICH. Gordon Williamson Co., 19180 Grand River, Detroit 23, Mich.

▲ **William F. Foster**, 20114 Fairway Dr., Grosse Pointe Woods, Mich. CA Est. $5,250,000. Crouchez Farms Development, 250 brick ranch HOMES, Violet, Harper, Evergreen south of 13 Mile Rd., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 29 Kansas
STREETS AND ROADS
November 29 Kansas

BUILDINGS—BA

▲ **Iowa, Council Bluffs**—COURT HOUSE and POST OFFICE—BA 12/20—General Services Admin., P. Bldgs. Service, 2306 E. Bannister Rd., Kansas City, Mo., lease-purchase project, court house and post office. $1,630,000. CD 10/9, under LB, Public Buildings.

▲† **Kan., Kansas City**—POST OFFICE—BA 12/20—General Services Admin., 2306 E. Bannister Rd., Kansas City, Mo., post office and federal bldg., Seventh and Ann Sts. $1,930,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt.

▲ **N. M., Albuquerque**—OFFICE—BA 12/20—General Services Admin., Denver Federal Center, Denver, Colo., lease-purchase project, 8 story, 142x300 ft., concrete, steel federal office $5,575,000. Extended date. CD 10/26, under Public Buildings.

▲ **Tex., El Paso**—HOUSING—BA 1/21—Purchasing Office, Fort Bliss, El Paso, construct and finance, 490 units of combined frame-masonry constr., incl. outside utilities, telephones, Capehart Housing. Fort Bliss. $5,000,000-$10,000,000. CD 4/25.

BUILDINGS—SLC

▲ **Tex., Mission**—POWER PLANT—Central Power & Light Co., 120 Chaparral St., Corpus Christi, soon lets contract electric power plant, $6,500,000; power lines, $200,000; area earthwork, grading, $50,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., engrs. CD 11/1.

BUILDINGS—LB & CA

▲ **Linbeck Constr. Corp.**, Box 13007, Houston, Tex., LB $1,910,000, four BUILDINGS, (1) fine arts center, (2) high school auditorium, (3) Junior High School, (4) elementary school, HOUSTON, TEX. Kinkaid Preparatory School, 1301 Richmond St., Houston, Tex. Bids Nov. 2. CD 11/12, under LB.

▲ **Pusey & Jones Corp.**, Front and Popular Sts., Wilmington, Del., CA $3,000,000. furnish, install machinery for expansion of NEWSPRINT PRODUCTION PLANT, LUFKIN, TEX. Southland Paper Mills, Inc., Lufkin, Tex. CD 8/7.

▲ **Stone & Webster Engineering Co.**, 90 Broad St., New York, N. Y., CA ETHYLENE UNIT, PORT NECHES, TEX. Total est. $35,000,000. Jefferson Chemical Co. (American Cyanamid Co. and Texas Co.), 260 Madison Ave., New York, N. Y. CD 11/15.;
Singmaster & Breyer, 420 Lexington Ave., New York, N. Y., CA CHLORINE PLANT (Port Neches, Tex.).
C. F. Braun Co., 1000 S. Fremont Ave., Alhambra, Calif., CA SPECIAL AMINES PLANT and outside battery limit facilities (Port Neches, Tex.).

▲ **Lembke-Clough & King Inc.**, 1013 Arcturus Dr., Colorado Springs, Colo., CA, $6,463,069, general contract 12 story Glockner-Penrose HOSPITAL, COLORADO SPRINGS, COLO. Sisters of Charity of Cincinnati, N. Cascade Ave., Colorado Springs, Colo. Bids Oct. 31, awarded Nov. 3. CD 11/8, under LB.

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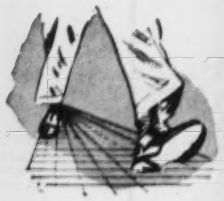

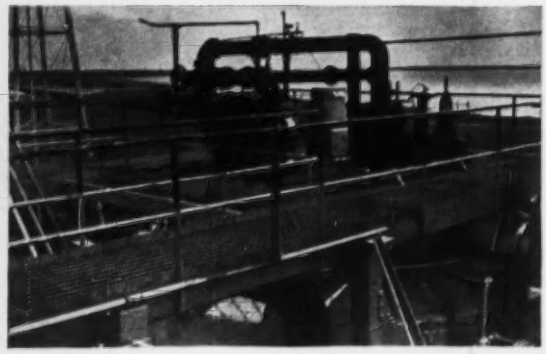

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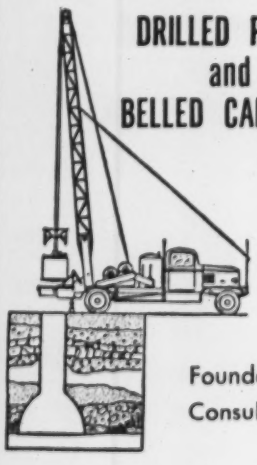

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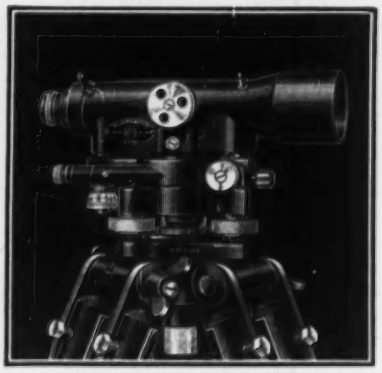

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DIETZGEN

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 4 Washington — December 12 California

STREETS AND ROADS

November 29, December 6 Nevada
December 4 Idaho, Washington
December 12, 19 California

▲ Wash., Moses Lake—HANGAR—BA 12/28—Boeing Airplane Co., Engineering Bldgs., Seattle, Wash., Construction Package No. 9, two-place hangar, incl. earthwork, paving, utilities and misc. items of work, Moses Lake Flight Center, Larson Air Force Base, Grant Co. Naramore, Baine, Brady & Johanson, 904 Seventh Ave., Seattle, Zone 4, archts.-engrs. CD 11/7, under LB.

BUILDINGS—BA

▲ Wash., Kenmore—SEMINARY—BA 12/11—Archdiocese of Seattle, 904 Terry St., Seattle, general contract for St. Thomas Seminary buildings. $2,000,000. J. W. Maloney, Central Bldg., Seattle, archt. (Correction—status). CD 11/8, under CA.

HEAVY CONSTRUCTION—LB & CA

▲† U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., rejected bids Oct. 23, reconstr. 150x7,000 ft. runway 2-20 with b. conc., constr. two 150x1,000 ft. c. conc. extens., Geiger Air Force Base, ENG-45-108-57-34, SPOKANE, WASH. LB $2,395,180. CD 10/26, under LB.

▲ CALIFORNIA—State Div. Hys., 1120 N St., Sacramento.

Charles L. Harney, Inc., 575 Battery St., San Francisco, Calif., LB $7,075,009, est. $7,800,000 (5 bidders) portions of multi-lane separation structure between Howard St. and Broadway or Embarcadero, 2 level structure to be composed of rein.-con. box girder spans for minimum of 4 traffic lanes on each level in San Francisco, San Francisco Co. Bids Nov. 14. CD 10/5.

▲† Griffith Co., 1060 S. Broadway, Los Angeles, Calif. CA $5,142,819, Los Angeles River Imprvt., 63 St. to below Dominguez, Los Angeles Area, Los Angeles Co., CIVENG-04-353-57-10, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 25, awarded Nov. 2. CD 10/31, under LB.

BUILDINGS—LB & CA

▲ Swinerton & Walberg Co., 200 Bush St., San Francisco, Calif., CA $2,500,000. PLANT, incl. refrigeration and egg candling facilities and office area, SAN LEANDRO, CALIF. Poultry Producers of Central California, 840 Battery St., San Francisco, Calif. Bids Nov. 2. CD 11/12, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 28 Ontario

▲ QUEBEC—BA 11/27—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont.

Beauharnois—Valleyfield vertical lift bridge over ship channel, Beauharnois Canal, Soulanges Section.

St. Louis vertical lift bridge over ship channel, Beauharnois Canal, Soulanges Section of St. Lawrence Seaway. Former bids rejected. CD 10/29, under LB.

BUILDINGS—LB & CA

▲ Canadawide Investments, Ltd., 330 Bay St., Toronto, Ont., cancelled contract steel framed OFFICE BLDG. and rein.-con. parking GARAGE, 188 University Ave., TORONTO, ONT. CA $2,000,000. CD 11/12, under CA.

▲ Redfern Constr. Co., Ltd., 36 Toronto St., Toronto, Ont., CA Est. $5,000,000. 12 story, 2 bsmnts rein.-con. OFFICE and underground parking, University Ave., TORONTO, ONT. Migros Ont. Ltd., and Canadian Co. Ltd., c/o L. Forster, archt., 77 York St., Toronto, Ont. Bids Aug. 10, awarded Nov. 6. CD 8/2.

▲ Anglin-Norcross Quebec Ltd., 892 Sherbrooke St. W., Montreal, Que. CA, $9,194,895. FEDERAL BLDG., Dorchester and Bleury Sts., MONTREAL, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Nov. 2. CD 9/6, under LB.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ Williams Bros. Constr. Co., 3311 Montrose Blvd., Houston 6, Tex., U. S. A. CA 230 mi. 20 in. oil pipe line and terminal from fields in southwest state of Barinas to Puerto Cabello on the Caribbean seacoast, incl. installing 100,000 bbl. per day diesel centrifugal pumping station, four 150,000 bbl. capacity steel storage tanks; five 268,000 bbl. tanks, VENEZUELA. Total est. $24,600,000. Socony-Vacuum Co. and Sinclair Oil & Refining Co., Caracas, Venezuela. CD 6/11; Morrison-Knudsen Co., 150 E. 42 St., New York 17, N. Y., U. S. A. and J. Rich Steers, 17 Battery Pl., New York 4, N. Y., U. S. A. CA 2,300-ft. loading pier at Puerto Cabello, electric power plant to serve Barinas oilfield installations (Venezuela).

(Proposal Advertisements are pp. 86 to 88)

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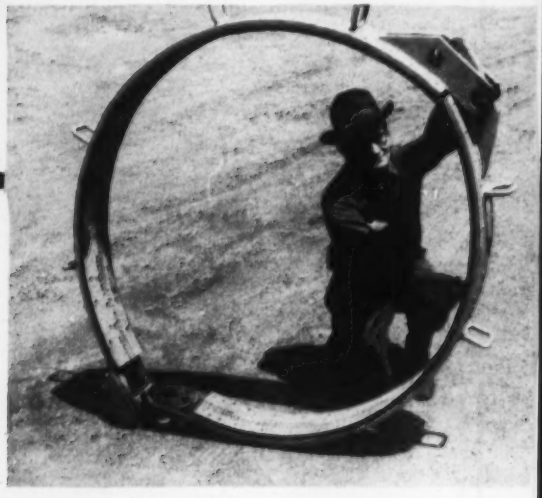

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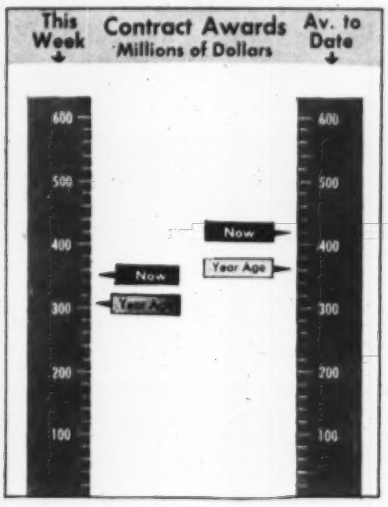
UNITED STATES STEEL

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 47 wks 1956	Chge %
	millions		
Federal	$17.5	$1,551.4	+1
State and Municipal	90.2	5,930.9	+25
Total Public	107.7	7,482.3	+79
Total Private	249.9	12,262.3	+14
U. S. Total	$357.6	$19,744.6	+16
By Type of Work			
Waterworks	$4.4	$323.3	+33
Sewerage	3.5	538.7	+53
Bridges	9.4	566.2	+28
Highways	30.0	2,248.8	+16
Earthwork, Waterways	11.6	673.0	+36
Buildings:			
Public, Excl. Housg.	42.2	1,886.7	+22
Public Housing	0.9	289.4	+21
Private Housing	78.3	5,001.0	−12
Commercial	48.0	1,754.4	+13
Industrial	121.6	4,828.3	+83
Unclassified	7.7	1,634.8	−13
U. S. Total	$357.6	$19,744.6	+16

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

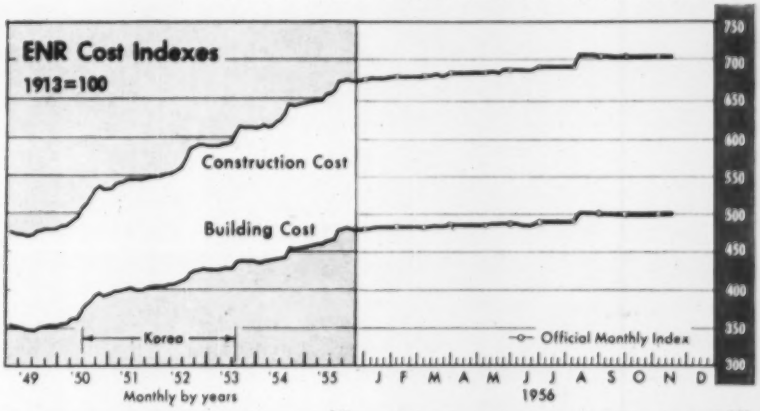
NEW CAPITAL FOR CONSTRUCTION

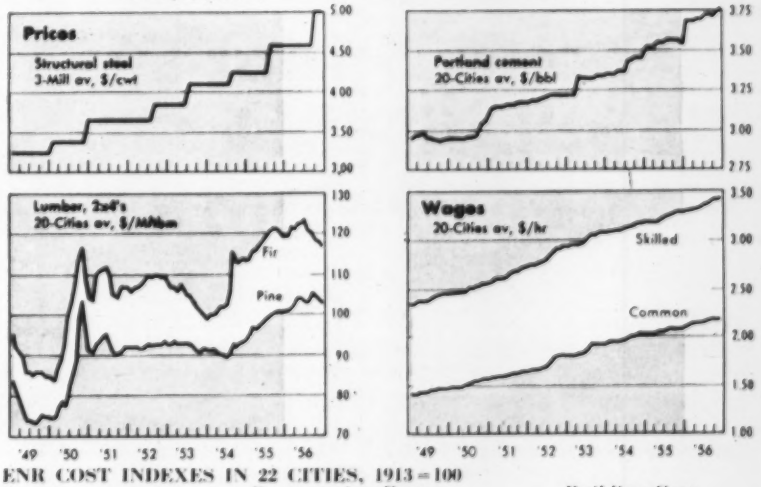
	Week of Nov. 15	Cum. 46 wks 1956	Chge '55-'56 %
	millions		
Corporate Securities	$19.7	$4,280.6	+32
State and Municipal:			
All Except Housing	42.7	4,129.1	−1
Housing	0.4	91.1	−2
Federal Loans	...	134.0	+11
Federal Aid	...	1,070.0	+25
Total Nonfederal	$62.8	$9,704.7	+14
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$62.8	$13,180.9	+10

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Nov. 15 1956	% Change from Oct. 18 1956	% Change from Nov. 17 1955
Construction Cost	703.89	−0.03	+4.6
Building Cost	500.24	+0.1	+4.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.85°.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.





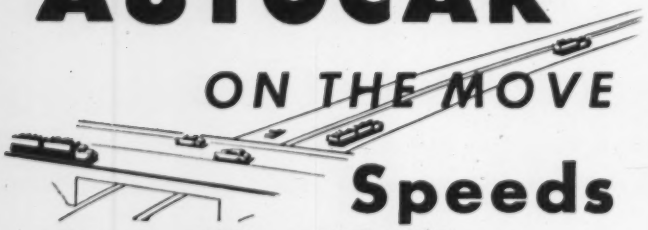
ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Nov. 1956	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Nov. 1956	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	522	0	+5.5	441	0	+5.3
Baltimore	602	0	+0.8	498	0	+4.4
Birmingham	553	−0.6	+5.5	455	−0.8	+3.0
Boston	747	+0.4	+5.5	509	+0.6	+4.8
Chicago	792	0	+4.1	507	0	+4.6
Cincinnati	715	0	+6.6	491	0	+5.5
Cleveland	819	−0.5	+4.4	508	−0.8	+3.9
Dallas	534	0	+4.7	449	+0.6	+5.4
Denver	696	+2.4	+6.7	519	+3.2	+7.4
Detroit	808	0	+4.4	527	0	+5.2
Kansas City	716	0	+1.9	505	+0.2	+1.8
Los Angeles	731	−0.3	+3.0	493	−0.4	+2.6
Minneapolis	757	0	+5.2	526	0	+4.8
New Orleans	564	−0.2	+3.5	464	+0.8	+3.2
New York	845	0	+6.4	571	0	+4.2
Philadelphia	747	0	+3.7	549	0	+2.6
Pittsburgh	727	0	+4.6	533	0	+5.3
St. Louis	759	−0.3	+4.1	525	−0.4	+4.3
San Francisco	723	−0.2	+5.7	488	+0.9	+5.4
Seattle	724	0	+5.7	452	0	+5.6
U. S.—20 Cities avg.	704	0	+4.6	500	0	+4.4
Montreal	563	0	+2.4	440	0	+3.1
Toronto	602	+1.7	+10.5	465	0	+7.7

Rugged Autocar Tandem Axle Tractor pulls 8-wheel dump trailer and tandem semi-trailer with 40-ton payloads.

AUTOCAR

ON THE MOVE



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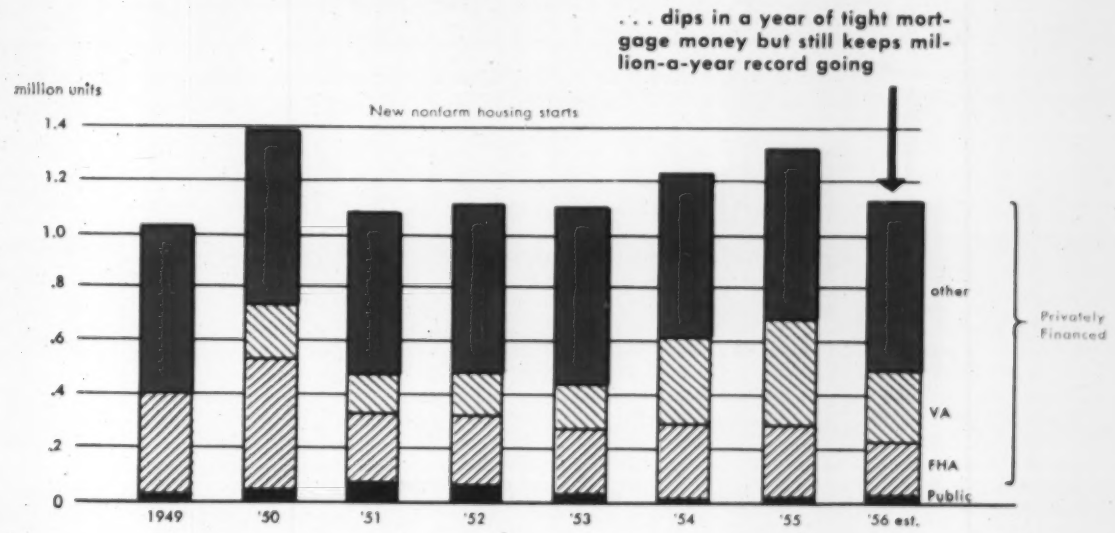
Homebuilding . . .



THE LONGER LOOK:
Homebuilders Face a Changing Market

Homebuilding has been the most disappointing economic activity of 1956. New housing starts are running about 15% below the 1955 total of 1,329,000, and dollar spending on new residential construction will run about 9% under last year's record of 16.6 billion. Early forecasts of homebuilding in 1957, furthermore, look for no improvement.

But this does not mean that the market for new homes is falling apart. This year is the eighth in a row with more than a million starts," a height never reached before 1949. And only in 1955 did more money go into residential construction.

What it does mean is that the homebuilding industry—which a short time back had a cheery vision of booming along at 1,300,000 units a year—must now settle for a low figure. And even to stay above the 1,000,000 level, it will have to contend with some fundamental changes in its market.

Builders are tempted to place the blame entirely on restrictive credit policies. Large builders in particular, who rely on government-backed mortgages to make mass housing developments possible, complain they can't get commitments from credit institutions to take on new mortgages in any great number. So some are predicting that new starts will drop as low as 800,000 next year.

Just how much easier credit would help is not at all clear. The fact is that the decline in housing activity set in before the current credit squeeze.

The peak in the annual rate of private starts was reached in December 1954. And the important advance indicators—applications for FHA mortgage insurance and requests for VA appraisals—began dropping after March 1955. Government agencies tightened mortgage terms only at the end of July 1955, and the general credit shortage can be dated even later.

Several years of high building activity have wiped out much of the backlog of needs for shelter that was so large in the early postwar years. This backlog had grown through the depression years of the 1930s and the war years in the early 1940s.

Now even areas with a large influx of new population, such as California and the Southwest, show signs of being "builtup." Government reports on apartment vacancies, indeed, have put Los Angeles and Dallas at the top of the list in percentage of unoccupied dwellings.

In most areas the number of vacancies is not large—and most of these do not last long—but some mobility has been restored to the housing market. For this reason, the supply of good, modern housing available to new families no longer is limited to the new homes started each year.

There is a greater choice of existing housing left by families who are moving to larger quarters or more suburban areas. And the alternative of modernizing or enlarging present houses has become more attractive with the availability of more generous credit terms.

A large unfilled demand remains for low-priced housing for low and lower middle-income families still living in substandard houses and apartments. But rising costs of land, labor and materials make it increasingly difficult to satisfy this demand without government aid through public housing or cheap credit.

This leaves as the prime market for homebuilders the growing families in the middle and upper-income brackets who want bigger and better houses. But families in this market, many of them already occupying postwar housing, are not easy to sell.

It takes attractive styling, careful pricing and real merchandising skill to convince these families that they should trade in their present homes for new ones. Many are inclined to look for bargains even though they can afford to move up on the housing scale.

Providing these bargains is no easy matter. For one thing, it is becoming increasingly difficult to find land at

reasonable prices and within reasonable commuting distance of large cities. Most of the readily accessible sites have been exhausted, and lot prices have been driven up on what remains.

Builders clearly have been aiming at a higher-income market. But they may have overshot the mark. Prices of new homes may be climbing too fast for the market. In 1954 the median proposed selling price of new homes was $12,300; last year, $13,700; this year, $14,600.

The homebuilding industry a few years ago was able to come up with economies in materials and efficient techniques in construction that made low-priced mass housing developments possible—and profitable. But these techniques cannot easily be transferred to today's more particular customers.

A challenge now faces the homebuilding industry that is new to most of its members—how to design and sell houses to people who want new homes but do not urgently need them. Homebuilding is back in a buyers' market.

(*B&F continued on page 80*)

Construction Markets

An On-the-Spot Report From Hartford

"If I stop borrowing money, I'm out of business—and I have no intention of letting more expensive money force me into retirement. Times are good and I'm not letting them pass me."

This comment, made to ENGINEERING NEWS-RECORD by an established developer of office buildings, shopping centers and industrial structures, sums up the current construction market situation in the Greater Hartford, Conn., area. Money is available—but the price is higher now than it was in the past.

ENR's check of the Hartford situation showed that optimism was high, with few exceptions, but the refrain of "expensive money" was constant.

One group still is singing the blues. An executive vice-president of the area's homebuilders association dourly predicted, "Homebuilding here in the coming four to five months will reach its lowest ebb since 1948. Money will cause it—nothing else."

But, even in this case, Hartford's basic optimism broke through the dark clouds. The homebuilder commented on the frozen interest rates on Veterans Administration and Federal Housing Administration mortgages and ventured, "in the spring, however, homebuilding will stage a snappy comeback. By then, Congress probably will have acted to raise VA mortgage interest rates, which, in turn will see action from FHA on its allowable rate. Then watch housing move!"

Although housing may drag, other types of construction will continue at a fast pace because developers are prepared to live with a 5.25% or 5.5% interest rate—rather than face economic stagnation.

Spot checks showed a total of at least $42.6 million worth of construction, public and private, that will be awarded in April or before.

Private work will include small office buildings, garden apartments, warehouses, tool shops, branch banks, neighborhood shopping plazas, some motels and churches.

Of the $14.5 million in private work coming up between now and April, only three jobs will cost more than $1 million: a $1.5-million office building in Hartford and two shopping centers in surrounding towns. One shopping center will cost $1.6 million, the other carries a $1.3-million price tag.

The area will continue in its ancient pattern of supplying hundreds of private construction jobs under $1 million, leaving the multi-million-dollar projects to appear suddenly, be fought over bitterly, and more than likely disappear.

But, the tendency to oppose bigness is counterbalanced by respect for the small businessman who appeals to the still-prevalent New England ideal of "rugged individualism." Such individuals get a warm welcome from the community and they provide a constant source of work for almost all segments of the construction industry.

The public works outlook also is promising. The types of public works projects coming along are varied. Flood-control expenditures, for example, will add up to $2.9 million in the near future. A $3.5-million state trade school is coming along. The Metropolitan District Commission will push ahead with a $6.5-million sewage works program and a $2.5-million waterworks expansion.

Other public works, state and federal, include a $2.3-million Air Guard expansion at Windsor Locks and $5 million for three new buildings at the University of Connecticut.

In this kind of a market, materials generally don't seem to be a serious problem.

Labor and land are the biggest worries at this time in Hartford. Labor is scarce, particularly in the masonry, plastering and electrical fields.

Apprentice programs, though fostered by building trades and contractors, are sapped as youthful neophytes often are lured into industry where the pay is good, fringe benefits are generous and work is steady.

Large-scale industrial tracts are few and far between, a major reason for the lack of new, sprawling plants. Smaller industrial parcels are available, but expensive.

Tracts for mass housing, in contrast, are available and prices are coming down. Owners now look for buyers, a reversal of the situation that prevailed in recent years. Big developers have built up land inventories equal to at least 18 months' housing production.

RARE IN THE HARTFORD AREA are multi-million projects like this $10-million office building for Connecticut General Life Insurance Co. But a steady flow of small jobs makes this a busy construction market.

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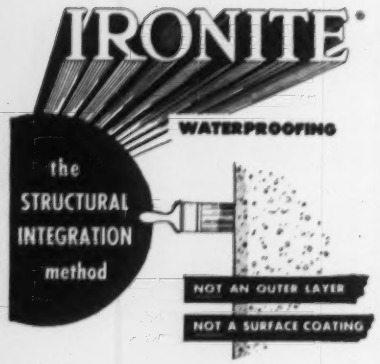

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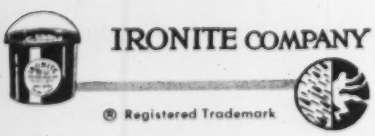

Land Experts Gather

Mortgage loan scarcity, impact of road program weighed at realty meeting

The National Association of Real Estate Boards last week called on Congress to provide flexible interest rates on mortgages insured by the Federal Housing Administration and the Veterans Administration.

The throttling effect of a tight money market on homebuilding was emphasized by a number of speakers, including Clarence M. Turley, of St. Louis, outgoing NAREB president.

Turley said a formula must be found under which interest rates on FHA and VA housing loans could go up or down, following the general money market.

"During 1956," Turley said, "the rigid and fixed interest rate on GI loans and the disposition on the part of the Housing Administrator to hold FHA rates in line with GI rates, have created a situation in which lenders are not particularly interested in making these loans, except at a discount varying from three to 10 or 11 points."

Housing Chief Albert M. Cole told the realtors at their annual convention in St. Louis that he would "go to bat" for homebuilders and that recommendations would be made to Congress to ease the tight market for mortgage money.

Cole declined to say precisely what proposals his agency will make, but he commented, "every facet of the problem is under study."

Another convention speaker, John A. Volpe, administrator of the new federal highway program, predicted the vast new interstate highway program would have a "revolutionary" impact on every phase of the American economy.

"Modern expressways not only will relieve traffic congestion," Volpe said, "but will bring about the transformation of outlying areas from raw land to busy industrial sites, commercial centers and residential sections."

The Society of Industrial Realtors, meeting concurrently with NAREB, heard architect John S. Bolles, of San Francisco, outline the responsibilities of industry when it moves into a community with a new plant.

"Industry," Bolles said, "must help local governmental agencies solve the traffic, housing and other problems that arise as a consequence of the growth."

Bolles urged that industries coming into a municipality purchase a sizeable tract of land, sufficient not only for the building itself but for other purposes.

"It is not enough," Bolles said, "simply to erect the new plant and put $1,000 worth of shrubbery in front."

And, the advantages of using engineering-contracting firms, which offer a package, (including site acquisition, design and construction) were cited by John P. Soult, president of Fruin-Colnon Contracting Co., of St. Louis.

State Office Needs

Chicago firm retained to make new study in Ohio

Ohio's state office needs will undergo a study by Griffen-Hagen & Associates of Chicago. The study is expected to lead to construction of at least one new office building in the near future, and others later.

John M. Wilcoxon, state finance director, said the new study would probably be complete by next April.

An earlier study authorized by Wilcoxon indicated that a complete group of office buildings will be required in Columbus to meet the needs arising during the next 10 years.

The planing board is charged with responsibility for establishing a continuous five-year program of capital improvements for the state.

Also looking ahead to the future were the trustees of Ohio State University. They authorized a $60-million dormitory construction program to accommodate an estimated 46,500 students by 1960.

Included in the long-range planning is a 4,400-man dormitory, cost $22 million; a 600-unit dormitory for married students, $6.6 million; and a 3,000-bed dormitory, $15 million.

Florida Construction Gets $100-Million Bond Boost

Financing has been authorized for $100 million worth of bond-financed construction in the Jacksonville Fla., area.

The Jacksonville Expressway Authority has been empowered by the State Board of Administration to designate a private bank or agency as trustee for a proposed $70-million bond issue, part of which will be used to refund an original $28-million issue. The remainder will be used for completion of the expressway project, now under construction.

In an entirely separate action, the Jacksonville City Council passed an ordinance permitting the issuance of $39 million in revenue certificates to

finance a series of construction programs.

The projects provided for include: A $15-million sewer extension; $6 million for drainage and paving, and $9 million for a new city hall, sports arena and an auditorium.

Buyers' Market

Bond prices down again, levels reach 17-year low

The long-suffering municipal bond market, which supplies the financing for the bulk of state and municipal public works construction, grew even more feeble last week.

Bond prices skidded to the lowest levels since September 1939, when Hitler's Wehrmacht goose-stepped across the face of Europe.

This time, tight money was responsible for the debilitation of the bond market.

One effect was a decision by the Public Housing Authority to postpone sale of $100 million in local housing authority bonds. The sale originally was slated to come in December; now it probably will come late in January.

And the State of Connecticut, which had rescheduled sale of revenue bonds for part of the Greenwich-Killingly Expressway from the original Oct. 30 date, also pared the package. The latest sale, $54 million, plus present cash balances probably will enable the state to meet construction requirements on the expressway until late spring.

Bond market observers also saw another sign of the market's weakness.

A $5.5-million school construction bond issue for the Levittown, N. Y., area was sold with a 4.30% coupon.

What caused it? A municipal bond expert from Hemphill, Noyes & Co. put it succinctly: "The trouble with school district bonds is a plain case of oversupply."

This particular bond sale, of course, affected only one school district in Long Island's mushrooming Nassau County. But in the present market, other school districts may go slow on their construction programs rather than pay the same price that Levittown paid.

Corporate securities and public utilities' offerings shared the weakness of the tax-exempt bond market.

One utility, marketing a $50-million high-grade issue, was forced to pay an interest rate of 4⅛%. And a small $3-million offering of first mortgage bonds, medium grade, by Sierra Pacific Power Co. brought a single bid—5¼%. The bid was rejected. But the offer, and

(Continued on page 83)

GASOLINE AND LPG ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
N56	4	2¼	3½	56	14.4 @ 2200 RPM
N62	4	2½	3½	62	15.3 @ 2200 RPM
Y69	4	2½	3½	69	21.4 @ 2400 RPM
Y91	4	2⅞	3½	91	28.5 @ 2400 RPM
Y112	4	3 1/16	3½	112	32.0 @ 2400 RPM
F124	4	3	4½	124	36.5 @ 2400 RPM
F140	4	3 1/16	4½	140	42.0 @ 2400 RPM
F162	4	3 1/16	4½	162	49.0 @ 2400 RPM
F186	6	3	4½	186	60.5 @ 2400 RPM
F209	6	3 1/16	4½	209	68.0 @ 2400 RPM
F226	6	3 1/16	4½	226	73.0 @ 2400 RPM
F244	6	3 1/16	4½	244	79.0 @ 2400 RPM
M271	6	3⅜	4½	271	86.2 @ 2400 RPM
M290	6	3¾	4½	290	92.2 @ 2400 RPM
M330	6	4	4½	330	104.4 @ 2400 RPM
M363	6	4	4 11/16	363	128.9 @ 2800 RPM
B371	6	4⅛	4½	371	110.0 @ 2400 RPM
B427	6	4 1/16	4⅞	427	127.0 @ 2400 RPM
G134	4	3⅛	4½	134	34.2 @ 2000 RPM
G157	4	3½	4½	157	40.0 @ 2000 RPM
E201	4	3⅝	4⅞	201	65.4 @ 2400 RPM
H227	4	3⅝	5½	227	54.0 @ 1800 RPM
H243	4	3¾	5½	243	57.9 @ 1800 RPM
H260	4	3⅞	5½	260	62.0 @ 1800 RPM
H277	4	4	5½	277	66.4 @ 1800 RPM
K363	6	4	4 11/16	363	123.0 @ 2400 RPM
J382	4	4½	6	382	74.0 @ 1400 RPM
T371	6	4¼	4⅝	371	119.0 @ 2400 RPM
T427	6	4 1/16	4⅞	427	140.0 @ 2400 RPM
U501	6	4½	5¼	501	159.0 @ 2400 RPM
R513	6	4½	5½	513	164.3 @ 2400 RPM
R572	6	4¾	5½	572	182.4 @ 2400 RPM
R602	6	4⅞	5½	602	191.7 @ 2400 RPM
V603	8	4¼	4¼	603	220.0 @ 2800 RPM
S749	6	5¼	5½	749	217.0 @ 2200 RPM
S820	6	5¼	5½	820	237.0 @ 2200 RPM

CUSHIONED POWER DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
ZD129	4	3¼	3⅞	129	34.0 @ 2000 RPM
GD157	4	3½	4½	157	39.0 @ 2000 RPM
*ED201	4	3⅝	4⅞	201	45.8 @ 2000 RPM
HD243	4	3¾	5½	243	55.0 @ 2000 RPM
*HD260	4	3⅞	5½	260	59.0 @ 2000 RPM
*HD277	4	4	5½	277	63.2 @ 2200 RPM
*JD382	4	4½	6	382	72.5 @ 1600 RPM
TD427	6	4 1/16	4⅞	427	106.0 @ 2000 RPM
RD572	6	4¾	5½	572	154.0 @ 2000 RPM
VD603	8	4¼	4¼	603	175.0 @ 2600 RPM
SD802	6	5 5/16	5½	802	202.0 @ 1800 RPM

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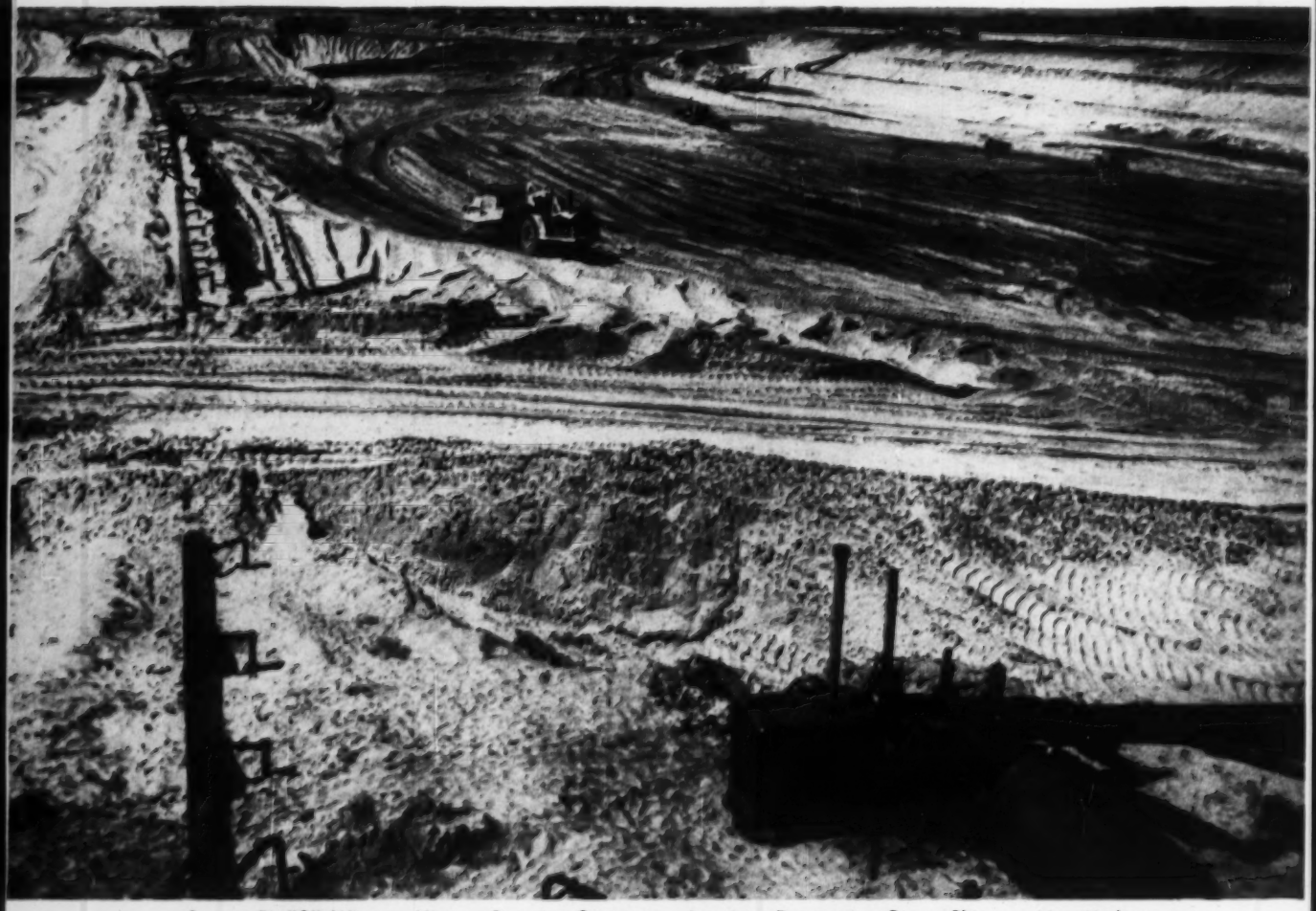

Borrow Pit "C", Winona, Minn. — Pumping Contractor: American Dewatering Corp., Chicago—New York

Johnson Construction Co., Grove City, Minn., estimates that by using wellpoints to predrain this huge borrow pit and by being able to excavate with rubber-tired equipment, they

"Cut in half, *at least*, the time required to remove the same amount of material using other methods."

Material removed is being used as fill in the construction of Highway 61 between Winona and Homer, Minnesota.

When pumping stops and ground water returns to the site, this pit will become one of Minnesota's famous lakes.

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Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

other developments in the market, led many bond experts to predict that interest rates will be as high or higher (4¼% and up) for any other public utility bonds that come to market in December.

One other special segment of the market, turnpike bonds, also dramatized the current weakness. The prices on turnpike bonds fell generally. Last week, for example, Massachusetts Turnpike Authority revenue bonds, carrying a 3.30% coupon, were quoted at 80½ to 81½, which is from 18 to 20 points below par.

In such a market, some authorities might quietly file plans for any new tollroads.

Business Briefs . . .

• **Five-year shortage**—Heavy steel plate will remain in short supply through 1957—and probably for the next five years, according to Charles L. Huston, Jr., president of Lukens Steel. Making a pitch for higher steel prices to finance the industry's expansion, Huston said that if the industry launched a new wave of plate expansion immediately, it would be 18 months to two years before any plates would be produced.

• **Aluminum output**—Production of primary aluminum for the first 10 months of the year totaled more than 1,385,000 tons, according to the Aluminum Association.

• **Army recruiters**—The personnel-short Alaska District of the Corps of Engineers has sent a two-man recruiting team to Army Engineers' district offices in the United States. Object of the hunt: Men to fill 80 engineering and inspecting jobs in Alaska. Salary range for the engineers extends from $6,800 to $9,331.

• **Approve borrowing**—Louisiana voters approved a constitutional amendment that enlarges the territory included in the Greater Baton Rouge Port Commission and also increased the commission's bond capacity to $50 million.

• **Higher salaries**—Presidents of 29 of the largest building materials companies didn't fare quite as well in getting pay raises as their counterparts in general industry—but they did top their 1954 performance, according to McKinsey & Co., management consultants. Executives of the building materials firms boosted their salaries 5.9% in 1955; the average for industry as a whole was 6.3%. Sample salary scale: For a firm with $30 million annual sales, the president received $62,000.

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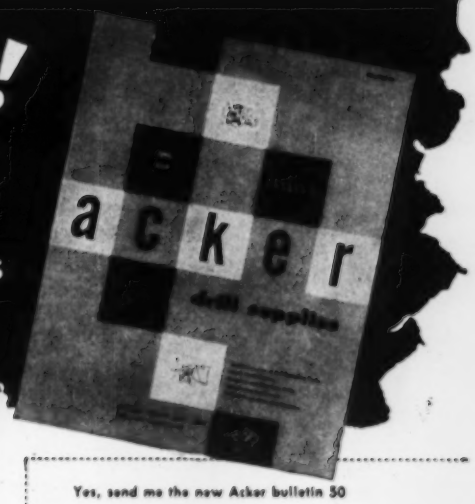

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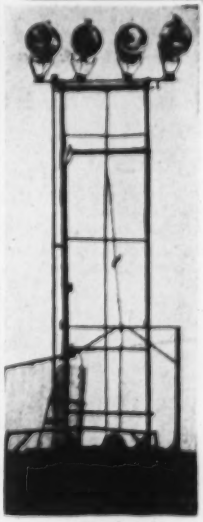
TOWER MOUNTED PROPANE FLOODLIGHTS



Skid-mounted, 18-ft. steel pipe frame tower weighs 600 lb.

Light volume adjustable up to 6,000 c.p. per light. Boom elevation adjusted by winch.

Assembly of four lights operates 12 hours at full capacity on 20-lb cylinder of fuel, at fuel cost of 15 cents an hour.

Light instantly with match even in —40° temperature. Safe, totally weatherized.

Also available: 4 to 8-ft. telescopic stands for individual lights.

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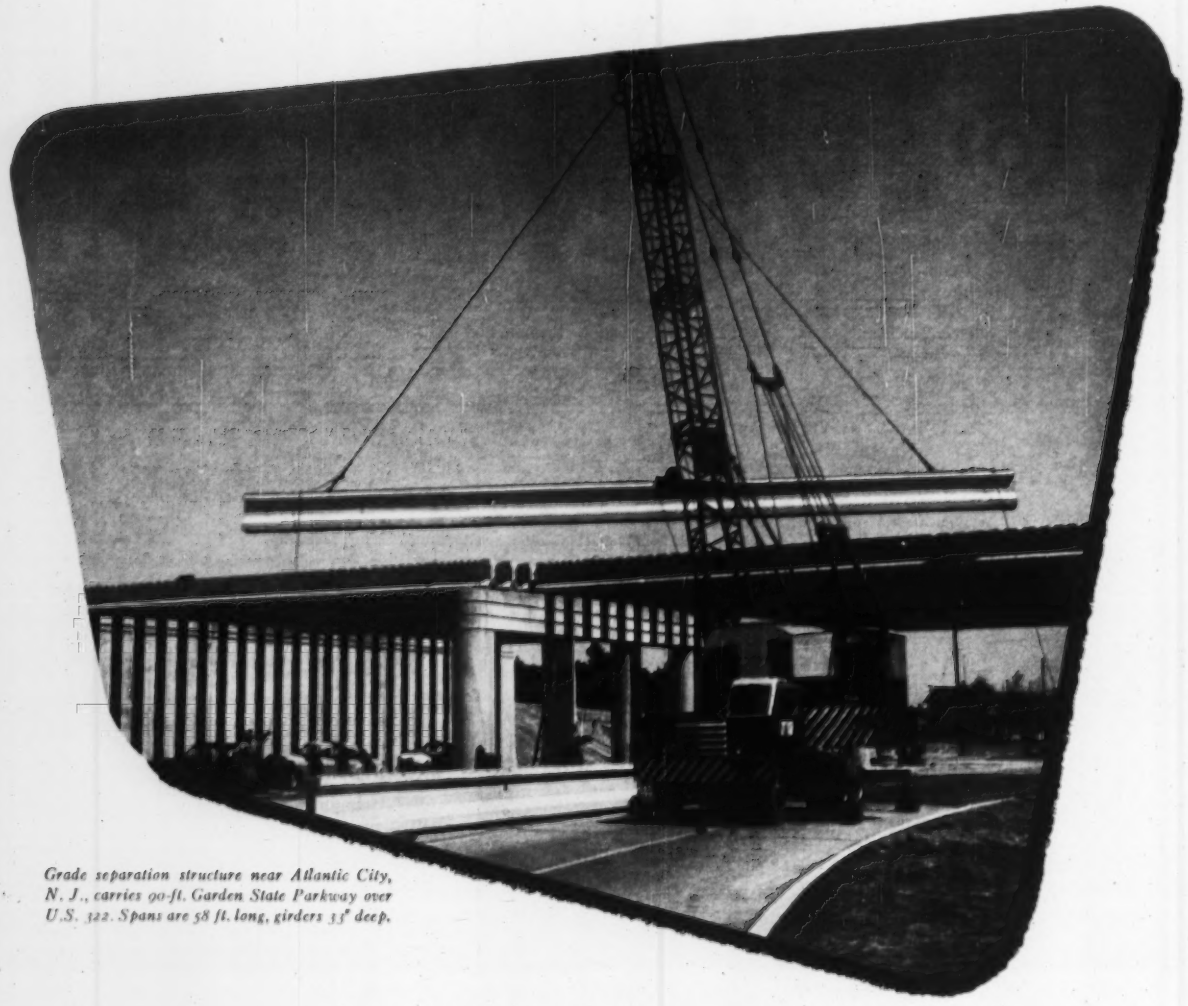
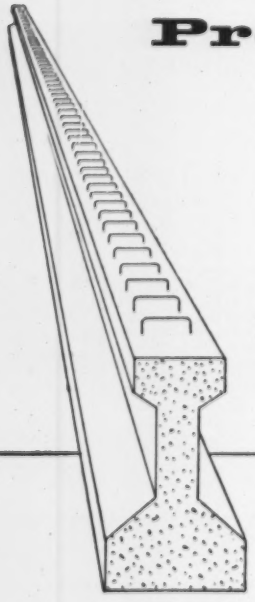


Grade separation structure near Atlantic City, N. J., carries 90-ft. Garden State Parkway over U.S. 322. Spans are 58 ft. long, girders 33" deep.

Extra bridges from your highway budget with

Prestressed Concrete



Thousands of bridges, grade separations and trestles must be built on the National System of Interstate and Defense Highways. Engineers should know how to get extra bridges from their highway budgets.

One way to make substantial savings is to use a basic design for most bridges. Production line techniques then can be employed to lower unit costs of fabricating precast, prestressed concrete members. Using a standard design will also save designers' valuable time, freeing them for work on other projects.

Prestressed, precast concrete eliminates the need for expensive falsework. Since members are smaller, dead weight is reduced. This simplifies transportation, speeds erection. Having unusual durability and requiring little maintenance, prestressed concrete bridges deliver ***low-annual-cost*** service. Send for helpful free literature. It is distributed only in the United States and Canada.

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Dept. 11d-17, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Labor

Plans for Legislative Action

Big campaigns are shaping up as construction labor and management join forces to change the Taft-Hartley Act

As President Eisenhower last week began preparation of his State of the Union Message, the Taft-Hartley Act, which has long troubled contractors and the building trades alike, was shaping up as the key labor issue in the next session of Congress. The forces now lining up promise to produce a legislative campaign more vigorous than any waged before and perhaps the first one to see an effective coalition of labor and management.

Here's an indication of what lies ahead:

• Under the leadership of Secretary of Labor Mitchell, the Administration, which previously has suggested Taft-Hartley changes to accommodate the peculiarities of the construction industry, has set up a joint labor-management committee scheduled to hold its first meeting this week. Object of the committee is to consider and recommend, on behalf of the construction industry, amendments to the law. Labor members of the committee are Richard Gray, president of the AFL-CIO Building and Construction Trades Department; Maurice Hutcheson, head of the carpenters union; and Peter Schoemann, president of the plumbers union. Last week's guess was that employer members, then unnamed, would come from the Associated General Contractors, National Constructors Association and specialty contractor groups.

• The Nassau and Suffolk County Contractors Association on New York's Long Island is spearheading an effort to get members of the construction industry, both labor and management, across the nation to educate themselves on Taft-Hartley problems and to endorse and support suitable amendments, with recommendations initially directed to the new Mitchell committee. Out of the first joint meeting sponsored by the association came general agreement that the law is not realistic, is inequitable to the building trades, and needs to be changed. Legalization of pre-hire contractors was reported to be one of the employers' goals.

• The National Chamber of Commerce will launch an "aircade" in February to take national legislative issues "to the doorstep of businessmen themselves all over the nation." Headed by Chamber President John Coleman, the dramatic legislative action program will seek to educate employers on the content and implication of pending legislation and to get employers to keep their Congressional representatives posted on their views. It looks as if Taft-Hartley, with emphasis on secondary boycotts and right-to-work legislation, will be on the list, along with minimum wage-fixing, housing, education, taxation and social security.

• The AFL-CIO Building and Construction Trades Department, with a record of effective legislative action behind it, will schedule for next March a Legislative Conference—its third in three years—to discuss its legislative goals. As in the past (ENR Mar. 15, p. 129), emphasis is expected to be on the Taft-Hartley Act (which building trades President Gray says has reduced union membership among construction workers from 86 to 60%), right-to-work laws, prevailing wages, housing and school construction.

• AFL-CIO President George Meany repeatedly is warning organized labor that one of its biggest threats "is in the legislative field." At the iron workers 30th convention, held last month in Washington, D. C., he explained how the Taft-Hartley Act can give the building trades "quite a going over" and said labor would "see to it" that the law is changed and right-to-work legislation removed from the books.

The big question is whether contractors and the building trades will push for a new law applicable only to the construction industry or will agree to settle on amendments. President Gray has suggested a new law that would be to the construction industry what the Railway Labor Act is to the railroad industry. Indications are that the Long Island contractor group is inclined to agree with this approach—one spokesman said legislation of pre-hire contract might lead to such a law. However achieved, minimum changes sought by the building trades include elimination of the mandatory injunction provision and legalization of common site picketing as well as of pre-hire contracts. The building trades also will seek repeal of Sec. 14 (b), which allows states to pass right-to-work laws. But this is a less crucial issue because that war can be waged at the state level if Congress refuses to lend its support.

(Labor continued on page 86)

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INSULATING Pre-cast Zonatile, made with Zonolite vermiculite aggregate, provides *both* insulation and structural strength.

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Joint Negotiations

Court case tests right of association members to bargain separately

A Los Angeles employers' association has challenged the right not only of member firms but of nonmember as well to weaken the collective bargaining strength of an employers' association by breaking away from joint negotiations and signing separate labor contracts when the association is bargaining for a master contract covering all members.

The Plumbing, Heating and Piping Employers Council of Southern California has filed a $5-million damage suit against four member and six nonmember firms. The firms are charged with violating their obligations to the association, conspiring to breach the master agreement, attempting to destroy the purposes of the council and restraint of trade.

Genesis of the suit was the council's effort last year to negotiate a contract covering AFL-CIO plumbers throughout Southern California. The council had asked all of its members to shut down, after scattered walkouts occurred, on the theory that a "strike against one is a strike against all." Several firms refused to comply and signed separate short-form agreements with the union, committing themselves to whatever terms the association might finally agree to with the union.

Basis of the suit against member firms is that they violated the council's by-laws by signing independently with the union. The nonmember firms, it is argued, were guilty of the same offense because, by executing the short-form agreement that incorporated by reference the provisions of the master contract, they surrendered, at least by implication, their collective bargaining rights to the council.

Labor Briefs . . .

• **New rates**—Wages of 15,000 carpenters in western Washington will be increased 14 cents an hour Jan. 1, giving a new rate of $2.94. Ten cents of this raise is for a scheduled deferred increase under an existing three-year contract and four cents is based on cost-of-living increases.

• **Tax deduction**—The U. S. Tax Court has ruled that three construction workers on the du Pont plant in Kinston, N. C., could deduct board and lodging at the project as business expenses for income tax purposes, because they were away from home on temporary employment.

OFFICIAL PROPOSALS

Bids: November 29, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., EST on November 29, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 44th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U. S. 93 for
Lowering Sills, Extending Gates
and Miscellaneous Work at Lock 23
Erie Canal, Onondaga County and
Lock 1, Oswego Canal, Oswego Co., N. Y.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor The Gov Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U. S. 93 may be examined and obtained at the office of Mr. William Robinson, District Engineer, 301 E. Water Street, Syracuse 1, New York.

The deposit for Plans and Proposal Forms for U. S. 93 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U. S. 93 is confidential and will be made known at the time of receiving bids.

Proposals for U. S. 93 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
Supt. of Public Works

Bids: November 27, 1956

Contract 439

MARGARETVILLE-ARKVILLE SEWERS

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Standard Time on Tuesday, November 27, 1956 for Contract 439, for the construction of about six miles of sewers, including a railroad crossing, four stream crossings, manholes and other appurtenances, and a total of about six miles of house connections. The sewers will be from six to 15 inches in diameter and the house connections six inches in diameter. The location of the proposed work is in the Village of Margaretville and in the hamlet of Arkville, in the Town of Middletown, Delaware county, New York.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1312 (Acting Secretary's Office), at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same; the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

OFFICIAL PROPOSALS

Bids: December 20, 1956

Port of Corinto, Nicaragua, C.A.

FURNISHING AND DELIVERING MATERIALS HANDLING EQUIPMENT AUTORIDAD PORTUARIA DE CORINTO MANAGUA NICARAGUA

Sealed bids in triplicate for Furnishing and Delivering Materials Handling Equipment, Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4° Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on December 20, 1956, at which time the bids will be opened.

The work consists of designing, manufacturing, testing, furnishing and delivering gasoline or diesel powered materials handling equipment, including the following general types:

14 Fork Lift Trucks, Cushion Tired—5,000 lb. capacity
2 Fork Lift Trucks, Pneumatic Tired—16,000 lb. capacity
1 Straddle Truck, Pneumatic Tired—18,000 lb. capacity
5 Tractors Warehouse, Cushion Tired—500 lb. drawbar pull
3 Tractors Warehouse, Cushion Tired—2,600 lb. drawbar pull
1 Crane, mobile-single engine pneumatic tired with 30 foot boom and minimum capacity of 14,000 lbs. on 10' radius
1 Crane, mobile-single engine pneumatic tired with 50 foot boom and minimum capacity of 25,000 lbs. on 15 foot radius
80 Trailers, warehouse-pneumatic tired, 72" x 108", 5000 pound capacity.
6 Trailers, heavy duty cushion-tired 84" x 204", 50,000 pound capacity.
1500 Pallets, hardwood, 4 way non reversible 48" x 72".

Spare parts sufficient for two years operation of the equipment listed above.

Contract Documents including specifications may be obtained from the Autoridad upon payment of Seventy Córdobas per complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City, and at the New York offices of Tippetts-Abbett-McCarthy-Stratton, Engineers.

The Authority reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad or bid bond satisfactory to the Autoridad, in the amount of five (5) percent of the total bid price, in Córdobas. The total bid price in Córdobas shall be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.

AUTORIDAD PORTUARIA DE CORINTO
Managua, Nicaragua

U. S. Government

United States Department of Commerce, Bureau of Public Roads, November 23, 1956. Sealed bids will be received at the Inter-American Highway Office, Bureau of Public Roads, Room 4069, General Services Administration Bldg., Washington 25, D. C. until 2 p.m., e.s.t., January 4, 1957 for the construction of Nicaragua project 8-A on the Inter-American Highway in Nicaragua, consisting of grading, drainage, selected borrow base and other work. The project begins at Sebaco about 60 miles north of Managua and extends north for about 48 miles to Condega. The approximate quantities of the major items of work are: 1,288,000 cubic meters Unclassified Excavation, 590,000 cubic meters Borrow Excavation, 186,000 cubic meters Selected Borrow Base Course, 3100 cubic yards Class A Concrete in Box Culverts, 365,000 lbs. Reinforcing Steel, 15,000 linear feet Nestable, Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72"). Bids will be accepted only from United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States or in Nicaragua. The need for progress payments, where progress payments may legally be made, will not be treated as a handicap in awarding a contract. Plans, specifications, and Proposal Forms are available upon request from the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 516 Avenida Roosevelt South, Managua, Nicaragua. C. D. Curtiss, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: December 6, 1956.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 6th day of December, 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, E. G. H. Youngman, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie	FINTC 56-1	New York State Thruway—Niagara Sect. Sub. N-4 (Washington St. to Franklin St.) Project I-865(7)	0.21 (0.11 Ramps)	16 Span Viaduct Structure 7 Span Elevated Ramp	$210,000 Plans $50	$3,750,000
Erie	NTC 56-9 FINTC 56-10 FISTC 56-11	New York State Thruway—Niagara Sect., Subs. N-2, N-3, (Clinton St. to Peabody St.) and 4 cross or service Roads Project I-865(11)	1.36 (0.78 Acc.)	9" Cem. Conc. Pavt. 37' & 49' Var. Wide = 1.27 Mi.; Grad., Drain. & Misc. Work = 0.09 Mi.; Cem. Conc. Pavt. Acc. Rds. = 0.35 Mi.; Asp. Conc. Ty. 2B = 0.43 Mi.; 1 RR Sep. Pl. Gird & Comp. I-Beam 932.4'; 2 Hy. Seps. Pl. Gird. & Comp. I-Beams 180.7' & 261.9'; 3 Hy. Seps. Comp. I-Beams 125.3', 141.3' & 127.1'	$405,000 Plans $100	7,359,000
Erie (Rte. 5)	FAC 56-20	City of Lackawanna Arterial Route (Fuhrmann Blvd.-Hamburg Turnpike Viaduct) (North City Line-Ridge Road) Project U-7504	0.15	Demolition	$1,500 Plans $10	28,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 W. Main St., Hornell, N. Y.						
Allegany	FASS 56-12	Nile-West Clarksville, Co. Rd. 1 Project S-80(3)	0.11	Bit. D.S.T. Broken Stone Prestressed Conc. Beam Br. 110'	$8,000 Plans $10	145,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Lewis	FASS 56-13	Remington Corners-Indian River-Croghan, Pt. 2, Co. Rd. Project S-337(2)	5.37	Bit. Mac. Ty. 1 Pen Meth. Prestressed Conc. Beam Br. 180'	$15,000 Plans $25	633,000
DISTRICT No. 10, M. E. Gove, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Queens (Rte. 25D)	FIHHE 56-5	Horace Harding Expressway, Sect. H, Cont. 1 (Parsons Blvd. to 192d St. Project I-862(11)	1.45 (3.72 Acc)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide = 1.37 Mi.; Cem. Conc. Pavt. (Acc. Rds.) = 0.60 Mi.; Asp. Conc. Opt. (Serv. Rds.) = 2.74 Mi.; Misc. Work = 0.46 Mi.; 2 Ped. Overpass I-Beams 106.7' and 106.7'; 2 Hy. Seps. Comp. I-Beams 108.2' and 105.9'; 1 Hy. Sep. Comp. Girder 112.2'	$350,000 Plans $100	6,277,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUP'T. OF PUBLIC WORKS

Bids: November 30, 1956.

Construction of a Steel Water Tank

ADVERTISEMENT FOR BIDS
FURNISHING AND ERECTING
ELEVATED STEEL WATER STORAGE
TANK, 500,000 GALLON CAPACITY
ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all material and equipment and doing all work required for the furnishing and erecting of an elevated steel water storage tank, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M. Eastern Standard Time, on NOVEMBER 30, 1956, and there publicly opened and read immediately thereafter:

CONTRACT 5.
FURNISHING AND ERECTING ELEVATED STEEL WATER STORAGE TANK
500,000 GALLON CAPACITY

1. Location: The work is located in Arlington County, Virginia, on County Owner property at N. Wakefield Street and 24th Street N.

2. Type of Work: The principal items of work include the following:

Furnishing and erecting a 500,000 Gallon Elevated Steel Water Storage Tank complete with all accessories, including Obstruction Lighting and Cathodic Protection.

3. Copies of Plans and Specifications, Information for Bidders, Bid Form and other Bidding and Contract Documents may be examined at the Office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia, upon Deposit of TEN ($10.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other Sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) Percent of the Deposit. No refund will be made for return of documents in poor condition or later than the two-week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia, will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in an amount of not less than Five Per Cent (5%) of the amount of the Bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

OFFICIAL PROPOSALS

Bids: December 13, 1956

Sewerage and Sewage Disposal Improvements

NORTH SHORE SANITARY DISTRICT
LAKE COUNTY, ILLINOIS

Sealed proposals, invited by the Board of Trustees of the North Shore Sanitary District, will be received by the Secretary-Attorney of the District at the offices of the District at the Waukegan Sewage Treatment Plant, Dahringer Road, Waukegan, Illinois, until 11:00 A.M., Central Standard Time, December 13, 1956, at which time and place they will be publicly opened and read aloud, for Division C of the Sewerage and Sewage Disposal Improvements entitled "Clavey Road Sewage Treatment Plant."

The work comprises the construction of the Clavey Road Sewage Treatment Plant including main building, grit building and sewage meter vault, primary settling tanks, aeration tanks, final settling tanks, sludge control building, sludge digestion tanks, sludge beds, water meter vault, outside piping and conduits, roads and walks, seeding and sodding, all excavation and embankment, and miscellaneous appurtenant work.

The Instructions to Bidders, Proposal, Agreement, Form of Performance Bond, Specifications, and Plans may be examined at the office of the North Shore Sanitary District or the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of these Contract Documents may be obtained from either office upon the deposit of $20.00 for each set. The amount of the deposit will be refunded if the documents are returned in good condition within 30 days after the opening of bids.

Each proposal must be accompanied by money or a certified check on a solvent bank or trust company, made payable to the North Shore Sanitary District, or by an acceptable bid bond, in the amount of not less than 5 per cent of the total bid.

The Board of Trustees reserves the right to reject any or all bids or to waive any informalities and to accept the bid which it deems most favorable to the interest of the North Shore Sanitary District, after all bids have been examined and canvassed.

NORTH SHORE SANITARY DISTRICT
LAKE COUNTY, ILLINOIS
By Mark H. Beaubien
Secretary-Attorney

Dated November 10, 1956

Bids: January 22, 1957

Port of Corinto, Nicaragua, C.A.

PORT CONSTRUCTION—PHASE I
PORT CONSTRUCTION—PHASE II
AUTORIDAD PORTUARIA DE CORINTO
MANAGUA, NICARAGUA

Sealed bids in triplicate for Port Construction, Phase I and II, at the Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad, Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4° Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on January 22, 1957, at which time the bids will be opened.

Phase I of the work consists of the construction of a new wharf approximately 370 meters long, including dredging and disposal of dredged materials; furnishing and placing rock and sand fill, riprap and filter blankets; furnishing and placing concrete piles and concrete deck structure; furnishing and installing timber fendering; and furnishing and installing deck fittings and track work. Listed below are the estimated qualities for the principle items of work.

85,000 C.M.	Dredging
46,000 Metric Tons	Rock Fill
139,000 C.M.	Sand Fill
26,000 L.M.	Reinforced Concrete Pile
5,000 C.M.	Concrete

Phase II of the work consists generally of the following construction: 1) Two transit sheds approximately 50 meters wide and 117 meters long; a pump house approximately 3.8 meters wide and 5.0 meters long; and a truck service shelter approximately 9.1 meters wide by 17.4 meters long; all steel frame structures with protected metal roofing and siding. 2) A guard house approximately 3.7 meters square, of concrete unit masonry construction with concrete roof and built up roofing. 3) Masonry and steel partitions; overhead steel and hollow metal doors; commercial projected steel windows; plumbing; sprinkler systems; electrical work, painting and miscellaneous incidental items of work for the building structures. 4) Fire pump and fuel tank; fuel dispensing units and storage tanks and interconnecting piping. 5) Water tower for fire protection system and standby pump. 6) Utilities, including fire and domestic water mains, sanitary waste and storm drainage, and electrical distribution. 7) Reinforced concrete paving of port area and railroad track work.

Separate Contract Documents including plans and specifications have been prepared for Phase I and for Phase II and may be obtained from the Autoridad upon payment of One Hundred and Seventy Five Cordobas for each separate complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City and at the New York offices of Tippetts-Abbett-McCarthy-Stratton Engineers.

Bids may be submitted for Phase I, Phase II, or both combined. A separate proposal form is provided for the combined bid.

The Autoridad reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad, or bid bond satisfactory to the Autoridad, in the amount of two (2) percent of the total price in Cordobas.

The total bid price in Córdobas will be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.

AUTORIDAD PORTUARIA DE CORINTO
Mangua, Nicaragua

Bids: November 30, 1956.

Time Changed From 11:00 A.M. To 2:00 P.M.

Construction of 16-inch and 30-inch Diameter Water Supply Mains Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of 16-inch and 30-inch diameter water supply main, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 2:00 P.M., Eastern Standard Time, on Nov. 30, 1956, and there publicly opened and read immediately thereafter:

STAGE II

CONTRACT 4

CONSTRUCTION OF 16-INCH AND 30-INCH DIAMETER WATER SUPPLY MAIN AND APPURTENANCES.

1. Location: The work is located in Arlington County, Virginia, on public streets from 30th Street N. to Yorktown Boulevard, along Yorktown Boulevard to N. Vermont Street and N. Vernon Street, along N. Vernon Street to 24th Street N. and on 24th Street N. to Wakefield Street (30 inch Water Supply Main) and on 24th Street N. from Wakefield Street to Old Dominion Drive and 26th Street. (16 inch Water Supply Main).

2. Type of Work: The principal items of work include the following:

Approximately 4400 lin. ft. of 30-inch steel or reinforced concrete water pipe together with manholes, cone valves, miscellaneous, blow-off, air release or inlet valves, connections to existing water mains, etc.

Approximately 1700 lin. feet of 16-inch cast iron water pipe, together with miscellaneous gate valves, manholes, hydrants, connections to existing mains, etc.

Approximately 1000 lin. ft. of 24-inch concrete storm sewers and appurtenances.

3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7), N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more. All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bids within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

Bids: December 10, 1956

Construction of High Pressure Natural Gas Pipe Line

The Scranton Spring Brook Water Service Company invites sealed proposals for the proposed construction of forty-four (44) miles of twelve (12) inch steel pipe line in Susquehanna, Lackawanna, and Luzerne Counties, Pennsylvania, until 2 P.M. E.S.T., Monday 10 December 1956, at which time they will be opened and read. Proposals may be mailed or delivered to the Offices of the Company at 30 North Franklin Street, Wilkes-Barre, Pennsylvania. Contract Documents and Plans with a return self-addressed envelope may be secured from the Company at the same address, upon receipt of a deposit of $50 for each set.

Rulison Evans
Chairman of the Board and President.

Bids: December 18, 1956

The City of White Plains Department of Public Works

NOTICE TO CONTRACTORS

Sealed bids for Construction of a 400-Ton Municipal Refuse Incinerator Plant will be received by the Commissioner of Public Works of the City of White Plains, New York, at his office, No. 255 Main Street, White Plains, New York, until 11:00 A.M. EST, Tuesday, December 18, 1956.

The work to be done under the major contract includes the furnaces, building, and appurtenant work.

Separate contracts will be let for the Electrical; Plumbing; and Heating and Ventilating Work.

Contract documents may be examined and obtained at the above office and office of Metcalf & Eddy, 1300 Statler Building, Boston, Mass.; $100 deposit.

Eric A. Andrews
Commissioner of Public Works

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

EMPLOYMENT OPPORTUNITIES

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The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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P. O. Box 12, N. Y. 36. December 6th issue closes November 26th

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Teaching appointments for September, 1957, available at university-associated College of Engineering in field of Civil Engineering. Salary and rank commensurate with experience and academic qualifications. Primary teaching field open as present faculty is flexible; preference, if any, would be in sanitary engineering and allied fields. Suburban location, Middle West, adjacent to large industrial center. P-3268, Engineering News-Record.

City Engineer: Unusual opportunity for graduate Civil Engineer or equivalent with professional license in southern Pennsylvania city. Experience essential in land surveying, street and sewer design and construction and related municipal work. Experience desirable in zoning and subdivision control. No structural design is involved. Would be in charge of Engineering Department, supervise survey crew and draftsmen, and would be expected to meet the public as required. Salary range $7,000 to $8,500 with usual benefits. Permanent non-political position for right man. Send resume of training and experience to: Borough of Chambersburg, 100 South Second Street, Chambersburg, Pa. Attention: J. G. Cree.

Estimator—Buffalo, New York Area experienced on large building propects. Please furnish experience record and salary requirements. Johnson, Drake & Piper, Inc., 2760 Walden Avenue, P. O. Box 2567, Buffalo 25, New York.

Chairman of civil engineering department in college in New York State. Ph.D. desirable, not essential. Position open summer of 1957. P-3324, Engineering News-Record.

Professor or associate professor in civil engineering and mechanics. College in New York State. Term starting February or September 1957. Ph.D. desirable, not required. P-3328, Engineering News-Record.

Engineers and draftsmen structural for steel and concrete design Public Buildings. Consulting Engineers office. Call or write giving training and experience. Saul Shaw & Co., 24 Commerce St., Newark, N. J.

Wanted: Draftsmen, also Bridge Designers and Highway Designers, preferably with some field experience for major highway and bridge projects. Forward education and experience records along with salary requirements. Brookhart & Tyo, Consulting Engineers, 1729 N. Front Street, Harrisburg, Penna.

Draftsmen—Opportunity for growth with a new division of an old, established company. Openings for draftsmen with architectural, structural or mechanical experience. Send complete personal and employment history with compensation requirements. (Chicago location). P-3452, Engineering News-Record.

Structural Engineers—Two to ten years experience on buildings or bridges. Attractive offer with progressive consulting firm. Box 121, Station H, Toledo, Ohio.

An employment advertisement in this EMPLOYMENT OPPORTUNITIES section will help you find the engineers you need. It's an inexpensive, time saving method of selecting competent personnel for every engineering job.

POSITIONS VACANT

Civil or Sanitary Engineers salary open—depending upon qualifications. Send resume to Gardner & Sterling, Consulting Engineers, P. O. Box 74, Salisbury, Maryland.

Experienced Estimator and Chief Engineer between the ages of 34 and 48 for preparing estimates, pricing, purchasing, expediting, and job management. Permanent position for the right man with Midwest General Contracting firm specializing in industrial, commercial and public works. As this job will be in the capacity of assistant to the president, none but top men need apply. Send complete history, including education, past experience, references, salary expected, and photograph, if available. P-3451, Engineering News-Record.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Wanted, Civil Engineering Draftsmen, Ink Tracers, Computers, Land Surveyors. Only well qualified need apply. Give experience record and salary expected in first letter. P-3379, Engineering News-Record.

Carpenter foreman or carpenter superintendent who is qualified to take over 3 highway bridges and complete same. Must be thoroughly familiar with plans and specifications. P-3386, Engineering News-Record.

Wanted: Civil Engineer, registered in New Jersey, at least 10 years experience in road and bridge design and construction. Must have executive ability. State qualifications in full, experience resume, references and salary requirements. Reply to P-3307, Engineering News-Record.

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'s and engineers considered. Full information and references in first letter requested. P-3116, Engineering News-Record.

Teaching appointments in civil engineering department. On Feb. 1, 1957 or earlier. Two more Sept 1, 1957. Salary and rank depend upon qualifications. M.S. degree not required. Apply chmn. Dept. of Civil Engineering, Univ. of Nebr., Lincoln, Nebraska.

Designer-Draftsman. Several positions open in structural, mechanical, or civil engineering in established engineering firm in Florida. Black and Associates, Inc., 700 S. E. 3rd Street, Gainesville, Florida.

Position open for an executive experienced in general contracting to take complete charge of our established, growing branch in South Florida. Must be experienced in the financial end as well as having a general contracting and engineering background. Opportunity for investment if desired. P-3511, Engineering News-Record.

Water System Superintendent Wanted by City of Rock Island, Illinois. This is a management job in handling water utility for a city with 50,000 people. Water superintendent has charge of production, distribution, treatment and storage of water, 33 employees in the department, superintendent reports to the City Manager. Qualifications: 5 years experience as water superintendent, or division head in a city water utility. College graduate, degree in civil or sanitary engineering preferred. Age: Under 50 beginning salary—up to $8,040 per annum, depending on qualifications. Good opportunity for advancement. Apply Director of Personnel City Hall Rock Island, Illinois.

POSITIONS VACANT

Estimator—Senior grade. Minimum seven years experience in supervision and preparation of all types of plant and equipment estimates for petroleum, chemical or allied industries. Capable of figuring to complete costs on all size projects. Reply, Personnel Mgr., Catalytic Construction of Canada, Limited, 600 S. Vidal Street, Sarnia, Ontario, Canada.

Estimator—Able to prepare complete bids for public, commercial and industrial buildings. Top man only. Location Ohio. Submit experience, references and salary desired. P-3177, Engineering News-Record.

Experienced owner's representative for construction of industrial plant in Venezuela. Graduate Engineer—knowledge of Spanish—good record. Large, expanding company with opportunity for excellent permanent connection. Send resume to P-3495, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Wanted: Master Mechanic to take complete charge of maintenance shop and stock room. N. E. area. Large concern. State age, training and experience. Good opportunity for right man. P-3522, Engineering News-Record.

Building Estimator wanted experienced in quantity work for concrete masonry and carpentry for large New York General Contractor. Send resume to P-3458, Engineering News-Record stating experience, salary desired and if working at present.

Engineer to work in office as assistant to Chief Estimator on quantities. Opportunity for trainee. Reply to P-3461, Engineering News-Record stating experience, references, salary desired and if working at present. New York Building contractor.

Civil Engineer—Recent Graduate—Municipal Engineering, Road, sewer & drainage design, field inspection and office work. Starting salary $4,500, minimum. January graduates considered. Send resume to W. M. Cronk, Town Hall, Main St., Stratford, Conn.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency 2132 E. 9, Cleveland.

EMPLOYMENT SERVICE

Salaried Positions $6,000 to $35,000. We offer the original personal employment service (established 46 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

POSITIONS WANTED

Civil Engineer, 50, Administrative, executive, expressways, bridges, steel and concrete structures, sewage, design and construction. Available Nov. 22 PW-3293, Engineering News-Record.

Construction Executive, Chief Estimator fully experienced, quantity survey to completion, subs, purchases, job manage heavy industrial, commercial, monumental, prefer N. Y., N.E., Mid-Atlantic States. PW-3313, Engineering News-Record.

Salesman, estimator, production man experienced in large scale industrial roofing and sheet metal contracting, wants worth-while connection with growing firm. Can produce profitable sales in volume. Write PW-3430, Engineering News-Record.

(Continued on following page)

HIGHWAY ENGINEERS

Immediate Employment

Starting positions in California's highway expansion program. $436/mo. to start, with first raise after 6 months. Subsequent promotional opportunities to higher level positions. Open to recent college graduates in civil engineering. Write for illustrated booklet: C. S. WARNER, Supervisor, Section E, State Personnel Board, 801 Capitol Avenue, Sacramento 14, California.

STRUCTURAL & CIVIL ENGINEERS

to work in our Boston Office

METCALF & EDDY
1300 Statler Bldg., Boston

Address inquiries to Mr. Ingalls

CIVIL ENGINEER

British Guiana

Very good opportunity for young, married engineer interested in South America. Transportation furnished; company housing available. Require 5 years construction experience. In letter give age, education, types of construction projects handled, and salary required.

P-3265, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Draftsmen, Designers and Engineers

Opportunity available for wide varied experience and advancement in Consulting Sanitary Engineers' office on several large interesting projects. Salary commensurate with experience and ability to assume responsibility. Usual fringe benefits offered relative to hospitalization, group insurance, etc. Location southwestern Ohio. Apply giving name, age, education, experience, and salary—or for an interview.

P-3371, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Important permanent positions available for MECHANICAL or ELECTRICAL ENGINEERS with manufacturer of equipment for the petroleum industry located in the southwestern United States. Required experience in the design and development of automatic control equipment. Positions available in Sales and Engineering departments. Salary open. Send resume to

P-3454, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS DESIGNERS DRAFTSMEN

TOP LEVEL JOBS

with leading companies

Positions in the fields of architecture, electrical & mechanical equipment, instrumentation & chemical process plants.

Also excellent opportunities and salaries for experienced men in designing of refineries, chemical & power plants, industrial & commercial buildings, highways. No fee.

Technical Division
PROFESSIONAL OFFICE
NEW YORK STATE EMPLOYMENT SERVICE
119 Fifth Ave., NYC OR 7-9100

Superintendent, Building Construction

Top flight man by growing company operating nationally. Give all pertinent data in reply, including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

Quantity Surveyor and Draftsman

Permanent position with well established company of mason contractors. Give age, education, experience and initial salary expected in first letter.

P-3311, Engineering News-Record
520 N. Michigan Ave., Chicago 6, Ill.

REPRESENTATIVES WANTED

for well established line of imported Surveying Instruments. Instruments meet American Specifications and Standards—already many users including Federal, State and County Agencies. Territories east of Rockies open excepting New England territory. All instruments sold under one year guarantee for quality and accuracy. Write full details experience, references.

UMECO OPTICAL DIVISION
455 California St.
San Francisco, 4, Calif.

When Answering BOX NUMBERS...

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

POSITIONS WANTED
(Continued from preceding page)

Management position wanted in industrial roofing and sheet metal contracting, by highly experienced executive, capable and well-known in the industry. Write PW-3433, Engineering News-Record.

Materials Testing Engineer — 8 years exp., college degree, desires position preferably in New Jersey. Presently supervising Spanish technicians on air base program. Available Feb. 1957. PW-3443, Engineering News-Record.

Superintendent, Heavy & Bridge Construction, 19 years experience, bid to completion, $200. PW-3420, Engineering News-Record.

Registered Professional Engineers with available engineering manpower desire to invest in establishing an office to represent any consulting engineering or architectural firm, or to handle their excess of work in an excellent midwestern location. PW-3356, Engineering News-Record.

Graduate registered professional civil engineer, experienced commercial and industrial building estimator, age 40, married, desires connection with general contractor. Middle West preferred. Available immediately. State location of work, salary range possible, other conditions, in first letter. PW-3541, Engineering News-Record.

Pract. Engineer, German, 40; studies mining England-Germany; 18 years Southamerica, bi-lingual; experience surveys, hydrographic, irrigation, floodcontrol studies, dredging, office work, Government reports; proven administrative ability; good organizer, liaison man for new companies; currently employed jr.-exec. capacity Venezuela; available soon; seeks position of responsibility; preferably Southamerica, with perspectives for career and higher-echelon training. PW-3519, Engineering News-Record.

Bldg. Const. Eng. B.S. experienced 23, single, leaving Air Force. PW-3478, Engineering News-Record.

Civil (Const) Engineer, Registered, age 30, 7 yrs. experience in design, survey, field management, planning and administration on diversified projects. Desires midwest. PW-3490, Engineering News-Record.

Res. Engr.-Proj. Engr.-Proj. Mangr. BSCE, 32, Diversified supervisory design & const. exp. in sewer & water systems and treatment plants, utilities, subdivisions; large scale maintenance. West U. S. preferred. Resume & ref. on request. PW-3473, Engineering News-Record.

Surveying Party of 4-men licensed fully equipped well experienced in all kinds of surveying work will work per day basis must be assured 3 months of work. Will travel. Write to 1124 New York Ave. Huntington, N. Y.

Construction Supt. of Assit. Available. PW-3464, Engineering News-Record.

Architectural Specification Writer, nine years experience private and civil service work. PW-3513, Engineering News-Record.

Construction Superintendent; industrial, commercial, institutional bldgs; large scale housing, churches etc; 25 years exp. field supervision. Similar position desired offering long range opportunity. Resident of New Jersey. PW-3521, Engineering News-Record.

Experience—35 years construction and maintenance of Bituminous pavements—storm and sanitary sewers—pumping station operation. Design and construction parking areas. Design and construction special equipment and attachments. Mechanical supervision. Equipment operation and repairs. Eligible for retirement. 60 years old. Excellent health. Not a day lost in 30 years. In present position 15 years and on call 7 days a week and 24 hours a day. Would like connection in line with forgoing experience or material or equipment sales. PW-3475, Engineering News-Record.

Project Manager, Project Engineer, 33, 10 years experience, registered professional engineer familiar all stages design and construction of paper mill and heavy construction. Seek position with contractor or mill. PW-3543, Engineering News-Record.

Publicity, Public Relations, Advertising— Former ENR editor, now associated with leading 4A ad agency, would like to obtain challenging position in publicity or advertising department of engineering firm or construction-equipment manufacturer. Sal. $10-12,000. PW-3479, Engineering News-Record.

EMPLOYMENT OPPORTUNITIES

Plan Your Future with BECHTEL in California on Hydro Electric Power Design

- Work in Los Angeles
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Immediate Openings

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Engineers
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Structural
Electrical
Mechanical

Designers
Piping
Electrical
Structural

Men experienced in design of earth-fill or concrete dams, spillways, penstocks and hydro electric power stations are desirable. Allied experience acceptable.

Send resume to
Manager of Employment & Placement
Industrial Relations Division

BECHTEL
Corporation
220 Bush St., San Francisco 4, Calif.

For an immediate personal interview you may phone:
Paul Keating, Plaza 7-4400, New York City
Joe Braddick, Fairfax 3-2401, Houston, Texas
Bill Milligan, Tucker 1549, Los Angeles, Calif.
Don Palmer, Douglas 2-4032, San Francisco, Calif.

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Drainage Engineers

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

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PLEASE WRITE FULLY TO OR INQUIRE AT

SVERDRUP & PARCEL ENGINEERING CO.
1134 LOCUST ST. ST. LOUIS 1, MO.

ENGINEERS
COME SOUTH!

We have immediate openings for Engineers — Designers — Detailers — Draftsmen — Civil — Highway — Structural — Traffic — Architectural — Mechanical — Electrical. Company-paid hospitalization, life insurance and retirement. 40-hour week. Air-conditioned offices. Salaries $400 to $800, depending on education and experience. Permanent position. Excellent opportunities for advancement. Send complete resume of education and experience with salary requirement to:

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MOBILE, ALABAMA

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ENGINEERS
DESIGNERS
DRAFTSMEN

McKEE has openings for top men to fill important, permanent positions, with excellent prospects for promotion to supervisory, staff and executive posts in our expanding organization.

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Investigate the advantages of top compensation, ideal working conditions, employment security, advancement opportunity and many generous benefits available to you at McKee.

Telephone TOwer 1-2300, Cleveland, Ohio or write to Edward A. Kolner, Arthur G. McKee & Company, 2300 Chester Ave., Cleveland 1, Ohio

Arthur G. McKee & Company
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

MECHANICAL ENGINEER

Engineer with experience in maintenance and equipment engineering desired for the Paper Converting Division of the Rhinelander Paper Company. Experience in the paper industry desirable but not entirely necessary. Age 25 to 35. Salary open. Address Director of Industrial Relations, Rhinelander Paper Company, Rhinelander, Wisconsin.

ARCHITECTURAL ENGINEER

Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

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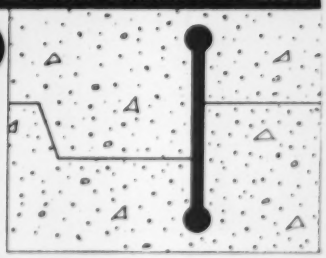

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More County Road Work

MOST INTEREST IN THE BIG ROAD PROGRAM inaugurated by the Highway Act of 1956 has been centered on the congested interstate network and other elements of the primary federal-aid system. There is thus a danger that too little thought is being given to the fact that the new program is going to place a greater load on the men charged with building and maintaining secondary roads. Part of this added load will be a result of the increase in federal aid for secondary road work, which was included in the 1956 act. But part also can be expected to be the result of the construction or reconstruction of highways designated as part of the 41,000-mile interstate network.

Standards set for the interstate system call for limited-access highways with practically all grade crossings eliminated. Inevitably, that will call for the relocation of many secondary roads intersecting the main highways, also for the construction of parallel roads where points of access to the rebuilt main roads are to be drastically cut in number.

And it appears probable that much of this induced construction on local roads will be in addition to work already on the local road program, which will mean a revision of many of those programs.

Fortunately, the county road organizations in many states are in much better shape to take on this extra load than they were a few years ago. Many are headed by engineers trained in highway engineering. Consequently, the planning for expanded programs can be done on a knowledgeable basis. Also, much more is known about types of construction adequate for secondary roads at a reasonable cost than was known only a few years ago. And research in that field is expanding. So, not only is more county road construction in prospect, but better county roads should be the result. The important requirement now is that the planning for these better county roads not be submerged in the welter of preparations for the interstate network program.

Help for the Draftsman

DRAFTING IS ONE FIELD of architectural and engineering endeavor that probably would more than repay the costs of studies aimed at improving economy, speed and quality of production. Any advances made in this direction not only will lower drafting costs but will also make possible more efficient use of technical personnel.

That an investigation of current practices is potentially profitable was indicated in a report in ENR Nov. 8, p. 136: American Machine & Foundry Co. made studies of its drafting practices and came up with several improvements. First, basic efficiency of draftsmen was improved by employing clerical help to do miscellaneous tasks for them. Next, drawings were simplified. As a result, AMF has been able to save 35% to 55% in drafting time.

While these techniques were developed for mechanical engineering drawings and may not be directly applicable to architectural and civil engineering drawings, they nevertheless are worthy of careful study. There is much to be gained if even a few of these should prove useful—or if they provoke other suggestions for saving time, money and labor.

Obviously, there is a danger of going too far with simplified drafting wherein office gains would be secured at the expense of field costs. In order that this may not occur, newly simplified drawings should be carefully tested to be sure that they do not make execution of field work more difficult nor be more liable to misinterpretation and mistakes than conventional drawings.

While individual firms can make the necessary investigations of drafting practices in their own drafting rooms, there is also much to be said in favor of a widespread study in which techniques used in different offices can be compared. Some useful standardization of practices might result. It is an idea that the professional societies could well consider.

Progress Against Pollution

THERE IS REASON FOR OPTIMISM in the battle to abate water pollution. Progress is being made. New evidence of this comes with the eighth annual report of the Ohio River Valley Water Sanitation Commission, the eight-state compact group formed in 1948 to tackle a seemingly insurmountable pollution problem in the industrial valley of the Ohio basin which extends from within New York State to Southern Illinois. Orsanco claims that whereas treatment works received sewage from but three out of every eight persons served by sewers in its valley in 1948, six out of eight is now the score.

These figures are a measure of progress not to be denied. They are figures to be praised, not buried midst other statistics (available and quite true) that can be cited to add to a very gloomy picture of what remains to be done in this field. Look rather at what has been done and is being done in construction of the facilities for abating pollution. The evidence is everywhere and is perhaps best summed up in ENR's figures showing more than 50% increase in sewage works construction volume this year over last. And this, without the newly authorized federal aid.

The point here is that success breeds success. There's a big job ahead to be sure, but it can be tackled from here on in with the self-assuredness that past performances supply. Pollution is being abated. There's no cause for complacency, but there is reason for an optimistic view of the job yet to be done.

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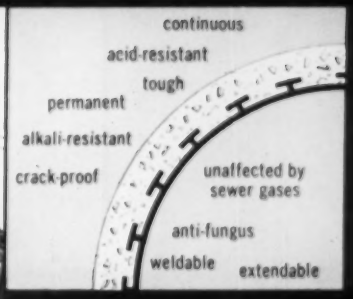

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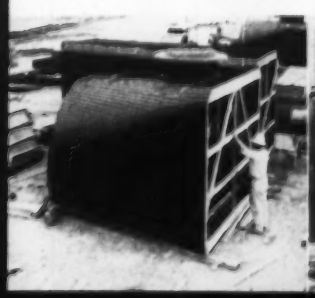

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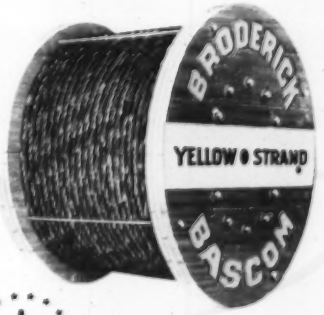

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